POLICY RESEARCH WORKING PAPER 1500

Agricultural Trade Liberalization in the Uruguay Round

One Step Forward, One Step Back?

Merlinda D. Ingco

The Uruguay Round appears to have made import protection in agriculture more transparent, but at the expense of significant liberalization in most countries. The gains from multilateral trade liberalization depend mainly on each country's own policy reforms and, to a lesser extent, those of their trading partners.

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Summary findings

After evaluating the Uruguay Round's impact on agriculture and border protection in the next decade, Ingco concludes that while there was significant reform of the rules — particularly the conversion of nontariff barriers into tariffs and the reduction and binding of all tariffs — in practice, trade will probably be liberalized less than expected.

The objective of the Round was to reverse protectionism and remove trade distortions. This may not be achieved in practice, at least not until further reductions are carried out in future rounds of negotiations. The major exception to this conclusion is in high-income Asian countries, where protection for major commodities will be significantly reduced.

The tariffication and binding of all tariffs on agricultural products represents a significant step forward. Liberalization is implicit because countries are prohibited from arbitrarily raising tariffs to higher new levels. But many of the newly established tariffs are so high in many countries as to effectively prohibit trade.

Patterns of liberalization vary considerably by commodity and by country. Generally, the extent of liberalization was diminished by binding tariffs to the base period of 1986–88, when border protection was at a high point. In most OECD countries, this was worsened by "dirty tariffication:" the new base tariffs offered even greater protection than the nontariff barriers they replaced. Even after the commitments to tariff reductions in the Round, the ad valorem measure of the final binding tariffs will remain higher than the average rate of protection in 1982–93.

A number of developing countries in East Asia, Latin America, and the Middle East chose to lock in previous liberalization efforts on some products. But for *most* commodities, there will be little actual liberalization, since *most* developing countries chose to bind their tariffs at a maximum level.

Even when countries reduced already-bound rates, bound tariffs remained significantly higher than current applied rates, giving countries the flexibility to raise tariffs later.

The high level of bound tariffs may allow countries to apply variable tariffs below the bound level, thus failing to stabilize tariffs and improve market access.

Moreover, the Round did not touch many of the worst distortions in developing countries, such as import subsidies, export taxes, state-trading monopolies, and domestic policies that implicitly tax agriculture.

This paper — a product of the International Trade Division, International Economics Department — is part of a larger research effort in the department to evaluate the impact of trade policy reforms in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room R2-052, telephone 202-473-7947, fax 202-676-1341, Internet address jngaine@worldbank.org. August 1995. (60 pages)

Agricultural Trade Liberalization in the Uruguay Round
One Step Forward, One Step Back?

by

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Agricultural Trade Liberalization in the Uruguay Round: One Step Forward, One Step Back?

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Abstract

The substantial reform in the rules governing agricultural trade including the introduction of tariff bindings which set an upper bound on future protection, is a major step forward which can be credited to the Uruguay Round agreement. However, the extent of intended liberalization was eroded because the tariff equivalents in major OECD countries were set at levels significantly higher than the border protection they replaced in the base period. Even after the tariff reductions scheduled in the Round, the *ad-valorem* tariff bindings in major commodities in several countries will remain higher than the rate of protection during 1982-93. This results in levels of protection potentially higher than historical levels. In developing countries, the reductions in border protection will also be modest at best, since most countries chose to bind their tariffs at a maximum level or to reduce already bound rates, which nevertheless remained higher than current applied rates. The most prevalent pre-UR border measures in developing countries (export taxes and import subsidies) are not disciplined in the GATT.

1. Introduction

The conclusion of the Uruguay Round was a historic breakthrough. After nearly eight years of arduous negotiations, new international rules were agreed to govern trade in agriculture, manufacturing, services, and intellectual property. In agriculture, which had effectively escaped GATT disciplines for decades, new international rules were established and constraints imposed on border protection, export subsidies and domestic support. Among the most important rule changes were tariffication, binding of all tariffs,[1] minimum access commitments in products where imports were previously banned or restricted, prevention of new export subsidies and bindings on the value and volumes of existing export subsidies.

[1]The commitment to the maximum tariff that can be applied at the border. This means that countries can apply tariffs at or below the bound maximum, but not to raise tariffs above that, unless it is renegotiated in GATT and compensation given to affected trading partners.

Tariffication--conversion of non-tariff barriers[2] (NTBs) to bound tariffs--moves agricultural trade towards the same treatment as manufactures within the GATT. As a first step towards liberalization, participating countries, with the exception of those covered by "special treatment" provisions (explained below), were required to convert their non-tariff measures to bound tariffs. While the concept is not without pitfalls as discussed in the literature,[3] tariffication provides the immediate benefit of achieving transparency of import protection. In addition, tariffs are generally preferred over other import barriers since they are more predictable, non-discriminatory and easier to bind or reduce and less susceptible to corruption. They also facilitate competition in internal markets and help ensure trade adjustments by importing countries to world market changes. Moreover, even though tariffication does not deal directly with export policies, it could provide indirect control on export subsidies. Exporting countries providing export subsidies have to maintain import barriers to avoid re-importing the goods exported. Arbitrage in the market implies that in general a country cannot set an export subsidy higher than the level of the tariff plus transport costs. Hence, tariffication facilitates an indirect control on the amount of export subsidies implied by removing the non-tariff barriers to reimporting.

But how much trade liberalization will actually be achieved from the UR agreement? Recent studies (IATRC, 1994; GATT, 1994) have provided broad evaluations of the final Agreement, but to date, no systematic comparison of pre- and post-UR border protection has been made on a wide range of agricultural commodities and countries. Most countries, particularly in OECD, converted their NTBs into specific tariffs, preventing an easy assessment of protection rates. The paper estimates post-UR *ad-valorem* tariff equivalents of border measures based on the

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[2]This includes quantitative import restrictions, variable levies, minimum import prices, discretionary import licensing, non-tariff measures maintained through state trading enterprises, voluntary export restraints and all similar measures.

[3]See Deardorff and Stern (1984) and Baldwin (1988).

detailed results of final concessions on tariffication and export subsidy commitments on major commodities.[4]

The extent of agricultural trade liberalization as a result of the Round is evaluated by comparing post-UR protection measures with historical estimates and a hypothesized future rate of protection without the UR agreement.[5] Participating countries subject to tariffication were required to apply the UR Modalities (Annex 3) in establishing their initial base tariffs -- the tariffs to be applied in the first year of the implementation of the Agreement -- based on prices and protection levels prevailing in the base period, 1986-88. That is, the height of the tariffs in 1995 should be equal to the actual level of nominal protection received in 1986-88. A significant difference between these two measures could be considered a form of "dirty" tariffication: this is also evaluated in this paper.[6]

The remainder of the paper is organized into 8 sections. Section 2 gives a summary of what was achieved in the area of market access, export subsidies and domestic support. Section 3 describes the methods used in estimating pre- and post-UR border protection. The results of tariffication and the changes in border protection before and after and the UR are discussed in sections 4 and 5. Estimates of trade liberalization are discussed in section 6. The implications for selected commodities and concluding comments are discussed in section 7 and 8, respectively.

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[4]The concessions are based on the published Schedules appended to the Final Act. There are also bilateral arrangements which were not in the country Schedules. These side agreements are considered in the case of grains for the EU and the United States and for beef and veal between the United States and Japan, and between the United States and the Republic of Korea.

[5]This approach overlooks the reductions in expected protection rates brought about by the introduction of bindings above current rates, but overstates the marginal reduction in protection due to bindings which reduce protection below historical levels (Martin and Francois, 1994). The effects of the tariff bindings on expected protection will be investigated in further analysis.

[6] Josling, et. al., (1994) had briefly mentioned the way countries took advantage of tariffication to raise the level of their tariff bindings.

2. What was Achieved in Market Access, Export Subsidies and Domestic Support?

2.1 Tariffication

The most significant aspect of the UR agreement on agriculture was a change in the rules regarding market access. Participants have agreed, except in cases of "special treatment,"[7] to convert non-tariff barriers into bound duties and not to introduce new non-tariff measures (Article 4 of the Agreement). The new bound tariffs, as well as tariffs which had been bound in previous negotiations, have to be reduced by at least 15 percent and by 36 percent, on a simple (unweighted) average over six years in industrial countries (1995-2000), and by at least 10 percent and 24 percent on a simple (unweighted) average over ten years in developing countries (1995-2004).

In line with the "special and differential" treatment given to developing countries, the following provisions apply to the latter: (i) in commodities subject to unbound tariffs at the beginning of the Round, tariff ceiling bindings were allowed, and (ii) the least-developed countries were given the flexibility to make a ceiling binding offer in agriculture in lieu of reduction commitments.

The agreed levels of tariffs were determined by the country offers, as expressed in the tariff Schedules appended to the agreement. The methods intended to be used in the establishment of these commitments were outlined in a negotiating document entitled "Modalities for the Establishment of Specific Binding Commitments under the Reform Programme (referred to below as the Modalities)." Since the Schedules of commitments have now been mutually accepted and form part of the Final Agreement, however, the Modalities have lost their power. The

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[7] Special treatment was allowed on commodities which met the following conditions: (i) commodities that are major staples in the diet, (ii) imports are less than 3 percent of domestic consumption in the base period, and (iii) no export subsidies have been provided. In return, minimum access levels were required to be introduced at 4 percent of domestic consumption rising to 8 percent over the implementation period of the Round. The principal cases of special treatment were rice imports in Japan, the Republic of Korea, and the Philippines.

implementation of the Agreement is therefore determined by the final concessions made by each participating country.

The Modalities provide a range of alternatives in establishing the tariff equivalents depending on the level of development of the participating country and the nature of the tariff and import restrictions at the beginning of the Round. That is, whether or not the tariff was already bound at the beginning of the Round and/or whether NTBs were applied. For commodities subject to bound tariffs at the beginning of the Round, participating countries were required to either (i) apply tariffication if NTBs existed, or (ii) establish the base tariffs at the current bound rate. In commodities subject only to unbound duties (i.e., no NTBs apply) at the beginning of the Round, participating countries were required to set their 1995 base tariffs and apply tariff reductions based on the level in September, 1986. If unbound duties and NTBs existed at the beginning of the Round, tariffication was required (discussed below). Developing countries were allowed to establish tariff ceiling binding in commodities subject to unbound tariffs.

A binding defines the maximum tariff that can be applied at the border. If a tariff is bound, say at 40 percent, any duty at the border greater than 40 percent is prohibited, whether it is a tax levied by the government or a "mark-up" charged by a state trading enterprise (STEs). STEs are not in conflict with the Agreement; however, NTBs maintained by STEs were required to be converted into tariffs by either applying (i) tariffication, (ii) a ceiling binding or (iii) special treatment. Under the Agreement, STEs or any import monopoly must not provide domestic protection in excess of the tariff bindings.

The tariffication of NTBs and the establishment of bindings on newly tariffied protection and existing tariffs will change the way governments can manage agricultural imports. Before the UR, bound tariffs in developed countries covered about 58 percent of all tariff lines and about 80 percent of the total value of agricultural imports. The UR concessions resulted in an increase in

the share of tariff bindings to almost 100 percent of the value of imports in the industrial countries. In developing countries and transition economies, the share of tariff bindings increased from 18 percent to 100 percent and will result in bound tariffs on 100 percent of their agricultural imports (GATT Secretariat, 1994). Hence, virtually all future trade in agriculture will be conducted under bound tariffs. Depending on the resulting level of bindings and tariffied protection, as well as the conditions under which the Special Safeguards and additional duties can be invoked (see below), this represents a significant step toward increased predictability and stability of trade barriers.

The effectiveness of tariffication is, however, reduced if the tariff bindings are set at very high levels, which would allow post-UR applied rates to remain prohibitive and could permit substantial variations in the range below the bound level. Countries can charge tariffs at varying levels within the margin of the binding, which could be linked to an internal price. The duty can be set as the difference of the given domestic price and the world price as long as the tariff charged does not exceed the binding. In practice, this could work similarly to a variable levy or a minimum price, despite the fact that the agreement states that variable levies, minimum import prices, etc. are forbidden and should be converted to tariffs (Article 4, paragraph 2) and that the Agreement in Customs Valuation generally prohibits the use of minimum prices.

The market access provisions did not result in "unconditional" tariffication in all cases. A Special Treatment clause is provided (Annex 5) which, under specific conditions, allows certain countries to delay tariffication of their rice markets for several years (e.g. Japan, the Republic of Korea and the Philippines). Safeguard Provisions were also included (Article 5) for importers in the cases of import surges and/or low world prices. Hence, in addition to the new tariffs in commodities subject to tariffication, additional duties can be charged if either imports increase above a specified base level, or border prices for imports decline below specified trigger prices. If imports exceed a certain percentage of the preceding three-year average, called the trigger level, or

import prices decline below a trigger price, additional duties (up to one-third of the normal applicable duty) could be imposed.[8] The trigger levels are relatively low and could be invoked without requiring proof of injury. It is difficult to assess the likely frequency and impact of the special safeguards, but they are a likely source of additional protection.

Exporting countries obtained so-called "minimum access commitments" in commodities subject to tariffication. For developed countries, the minimum access was established at 3 percent of 1986-88 consumption levels, increasing to 5 percent in 2000. For developing countries, the levels are set at 2 percent in the base period, rising to 4 percent in 2004. However, with few exceptions, most developing countries did not apply tariffication for most products and as a result did not commit minimum or current access provisions. If current imports are above the levels required in the minimum access, current levels are to be maintained (Modalities, paragraph 5 and Annex 3). Imports under the minimum access provision are, however, not guaranteed. They are merely encouraged by receiving a reduced tariff (maximum of about 32 percent of the bound tariff rate) on "in-quota" imports. In cases where exporters enjoyed preferential market access in the past or previously had voluntary export restraint agreements, their access opportunities were maintained under a "current access" provision (Modalities, paragraph 6 and Annex 3).

In some countries, previous trade arrangements under the old quota systems were allowed to count as meeting the minimum access requirements. For example, the US sugar import quota system was included by applying a new tariff quota system to the same quota from the same countries. In the same way, the US Meat Import Law was translated into a tariff quota system with the quotas given to the same countries which held previous quota rights (e.g. Australia and

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[8] The trigger level on quantities is defined as 105 percent of base period imports for commodities where imports are more than 30 percent of domestic consumption; at 110 percent of base imports where imports are between 10 percent and 30 percent of consumption; and at 125 percent if imports account for less than 10 percent of domestic sales. The trigger level is adjusted by the change in domestic consumption between the two most recent years, but cannot be below 105 percent of the preceding three-year average of imports.

New Zealand). In these cases, the minimum access provisions of the UR agreement will not open markets significantly and will provide very little trade expansion beyond previous or current levels. Even in other commodities, an evaluation of the minimum access commitments for major importing countries relative to their recent import levels indicate that the additional trade likely to occur as a result of the minimum access provisions will be very small relative to current world trade levels. The only major exception is in rice, where the minimum access commitment of Japan and the Republic of Korea will result in increased trade of about 1 million tons annually, nearly 7 percent of 1991/92 world trade. Finally, of course, the need for quota allocations brings back the non-transparency of import protection.

2.2 Export Subsidies

Another reform in the rules is in the area of export subsidies. These changes are important because export subsidies have been the major mechanism of protection in exporting countries. The long history of high protection and support in the industrial countries has been associated with surplus production, a substantial part of which is sold on world markets at subsidized prices. The pre-UR policy regime provided no effective contraint on the volume of subsidized exports, resulting in uncertainty in export markets for other producers and constraining the expansion of competitive trade. The share of world exports which was covered by export subsidies was significant for major agricultural commodities, particularly in grains, livestock products, and sugar. In 1986-90, the European Union subsidized more than 95 percent of its exports of wheat and butter, more than 90 percent of cheese exports, 40 percent of its sugar exports, and more than 30 percent of its milk powder exports. US subsidized exports were largest in butter (94 percent), wheat (55 percent), non-fat dry milk (40 percent) and cheese (23 percent). The EU has been the main user of export subsidies until the late 1980s when the US and other countries also started the

significant use of export subsidies to win market shares. The UR agreement marks the first effective discipline on agricultural export subsidies since the founding of GATT.

The new rules on export subsidies under the Round, while important, were not as sweeping as those for non-tariff barriers, in that the Round did not outlaw export subsidies but only imposed limits on their application. Participating countries accepted binding commitments on maximum export subsidization (Article 3), leading to an agreed reduction in expenditure on export subsidies (industrial countries by 36 percent and developing countries by 24 percent) as well as a reduction in the quantity of subsidized exports (industrial countries by 21 percent and developing countries by 14 percent) over the implementation period.[9] The agreement also requires countries not to extend export subsidies to commodities which were not subsidized in the base period. The results of these commitments for selected commodities in major countries are shown in Table 1a and 1b. As shown, export subsidies are allowed up to certain levels instead of being explicitly illegal as they are for nonagricultural products.

The impact of the export subsidy reductions will depend on the quantity of the commodities affected, the share of subsidized exports to total trade, and the policy adjustments made by major countries during the implementation period. An analysis of the final commitments indicates that the UR bindings on volumes and outlays will probably have a significant effect on trade flows and prices. Tables 1a and 1b show that the share of world trade directly covered by export subsidies was significant for many agricultural commodities. Since most developing countries impose a tax on most of their agricultural exports, there are relatively few developing countries with export subsidy commitments, namely Brazil, Colombia, Czech Republic, Poland and Venezuela.

To determine the relative importance of the constraint on volume of export subsidies, we can calculate the quantity of exports that will not be subsidized (21 percent of the volume of

[9]Six years for industrial countries and ten years for developing countries.

subsidized exports in the base period) as a share of world trade. As a share of world trade in 1989-93, the decline in the volume of subsidized exports would be most significant in wheat and wheat products (15.4 percent), dairy products such as milk powder (20 percent) and butter (17.5 percent), and in meat markets, particularly poultry (9.3 percent) and beef and veal (8.8 percent). In contrast, the reductions in the volume of subsidized exports in sugar, oilseeds and vegetable oils, and other meats represent a very small share of world trade, and hence would not likely have a significant impact on world markets in these products.

While the reductions are significant in the most subsidized products, the allowable volume of export subsidies for major commodities at the end of the implementation period will remain substantial, with the largest amounts remaining in wheat (over 40 million tons), coarse grains (nearly 20 million tons), beef and veal (over 1 million tons), and vegetable oils (about 1 million tons). While the reforms undoubtedly represent an improvement over previous levels, the remaining subsidies still represent a substantial distortion in world agricultural trade.

Table 1a. Base and Final Subsidy Commitments for
Selected Commodities in Major Subsidizing Countries
000 metric tons

Country	Wheat		
	Subsidized Exports		
	1986-90	1995	2000
US	18,382.4	20,238.3	14,522.1
EU	17,008.1	19,118.6	13,436.4
Canada	11,204.8	13,590.3	8,851.8
Turkey	2,306.0	2,600.2	1,461.2
Hungary	1,444.0	1,393.0	1,141.0
Total (top 5)	50,345.3	56,940.3	39,412.4
Total Export Subsidies	53,018.3		
World Trade 1991/92	108,289.0		
Top 5 as % of Total Export Subsidies	95.0		
Top 5 as % of World Trade in 1991/92	46.5		

Country	Rice		
	Subsidized Exports		
	1986-90	1995	2000
Indonesia	299.8	295.6	257.8
EU	183.7	177.3	145.1
Uruguay	53.2		45.7
US	48.8	271.7	38.6
Colombia	18.9		16.3
Total (top5)	604.4	744.5	503.4
Total 1/	604.5		
World Trade	14,080.0		
Top 5 as % of Total Export Subsidies	100.0		
Top 5 as % of World Trade in 1991/92	4.3		

Country	Vegetable Oil		
	Subsidized Exports		
	1986-90	1995	2000
Brazil	552.1	544.3	474.7
Hungary	185.0	179.0	146.0
US	178.9	587.5	141.3
Canada	117.4	113.3	92.8
Turkey	72.2	94.5	76.5
Total (top5)	1,105.6	1,518.7	931.3
Total 1/	1,197.2		
World Trade	21,470.0		
Top 5 as % of Total Export Subsidies	92.4		
Top 5 as % of World Trade in 1991/92	5.1		

Country	Coarse Grains		
	Subsidized Exports		
	1986-90	1995	2000
EU	12,624.5	12,182.6	9,973.4
Canada	4,392.0	4,418.9	3,617.6
Mexico 1/	3,577.8	3,513.1	2,951.0
US	1,975.4	1,906.3	1,560.6
Rep. of South Africa 2/	1,893.5	1,827.3	1,495.9
Total (top5)	24,463.2	23,848.2	19,598.5
Total 1/	28,328.6		
World Trade	91,680.0		
Top 5 as % of Total Export Subsidies	86.4		
Top 5 as % of World Trade in 1991/92	26.7		

1/ Corn and sorghum subsidy volumes have been added

2/ Barley, maize and maize products, oats, and grain sorghum subsidy volumes have been added together

Source: Author's calculations; basic data are from Uruguay Round country schedules.

Table 1b. Base and Final Subsidy Commitments for
Selected Commodities in Major Subsidizing Countries

000 metric tons

	Beef & Veal		
	Subsidized Exports		
Country	1986-90	1995	2000
EU	1,034.3	1,118.7	817.1
Brazil	106.7	105.2	91.779
Austria	80.9	90.1	63.882
Poland 1/	51.7	49.9	40.9
Hungary	36.0	35.0	28
Total (top5)	1,309.6	1,398.9	1,041.7
Total 2/	1,372.4		
Top 5 as % of Total Export Subsidies	95.4		

	Pigmeat		
	Subsidized Exports		
Country	1986-90	1995	2000
EU	508.6	490.8	401.8
Hungary	115	111	91
Poland 1/	51.7	49.9	40.9
Sweden	47	45.4	37.1
Finland	8.1	11.3	6.4
Total (top5)	730.4	708.4	577.2
Total 2/	741.0		
World Trade	2,441.0		
Top 5 as % of Total Export Subsidies	98.6		
Top 5 as % of World Trade in 1991/92	29.9		

	Poultry		
	Subsidized Exports		
Country	1986-90	1995	2000
EU	367.80	440.10	290.60
Hungary	141.00	136.00	111.00
Brazil	97.94	96.57	84.23
US	35.44	34.20	27.99
Poland	16.40	15.80	13.10
Total (top5)	658.57	722.66	526.92
Total 2/	663.68		
World Trade	2074.00		
Top 5 as % of Total Export Subsidies	0.99		
Top 5 as % of World Trade in 1991/92	31.75		

1/ The volume of export subsidy for Poland includes all meats except for poultry

2/ Total Export Subsidies

Source: Author's calculations; basic data are from Uruguay Round country schedules.

2.3 Domestic Support

The third area of reform was the binding of domestic support levels. The proposal in the Dunkel package to reduce support on a commodity basis was not agreed in the Round. Instead, the new rules and bindings were established on the level of total domestic agricultural support, called Aggregate Measure of Support (AMS) which includes border price support through tariff and export subsidies discussed above (Annex 3, paragraph 8). Based on fixed external prices in the base period (1986-88), the agreement specifies the determination of the AMS and requires countries to reduce their total AMS by 20 percent over the implementation period. For several reasons, these concessions on domestic support reductions are considerably less effective than those of border measures. First, the constraint on aggregate, rather than commodity specific, support leaves much scope for continued support policies and domestic policy action on particular commodities. The lack of discipline over individual commodity policies will also likely lead to increasing policy distortions between commodities. Second, the "green box"[10] will allow many policies to continue unreduced in participating countries. Third, the two important support measures, the EU compensation payments and the US deficiency payments are exempted from the reduction commitments, even though they are not fully production neutral. Fourth, domestic subsidies with significant production impacts play a relatively limited role in other major countries. Last, the AMS calculations are based on the outlays during 1986-88, which was a period of relatively low world prices for agricultural products and therefore high expenditures on domestic support to farmers. Because of higher world prices and recent domestic agricultural policy reforms

[10] This includes general services involving expenditures which provide services and do not involve direct payments such as research, pest and disease control, training, extension, marketing and promotion, and infrastructure services. These measures shall not involve price support to farmers. In developing countries, government measures to promote agricultural and rural development such as investment subsidies, input subsidies provided to low income farmers (cash or kind) are exempted.

in major countries, the new commitments may not involve any further real reductions in current levels of domestic support.

3. Estimates of Pre- and Post- UR Protection

How will the new UR rules and disciplines affect border protection in agriculture? This section outlines the methods used in estimating pre- and post-UR border protection measures. Agricultural protection as a result of the Round will be disciplined primarily by the outcome of tariffication and the reduction commitments on export subsidies and domestic support. In general, the results of final concessions on tariffication will affect the post-UR nominal protection on imported goods, while the export subsidy commitments will define the rate of nominal protection on exportables. In cases where exporting countries are providing export subsidies and also maintaining import barriers on homogenous goods, arbitrage implies that in general, a country cannot set an export subsidy higher than the level of the tariff. Hence, the level of the tariff equivalent sets a ceiling on the level of the export subsidy and would also be indicative of the maximum nominal protection rate. To be consistent with the tariffication provisions, I have used a measure equivalent to the nominal rate of protection. This measures the magnitude of the historical price distortion or price wedge induced by non-tariff measures. The post-UR ad-valorem tariff equivalent of border protection is estimated based on the tariffication and export subsidy commitments.

3.1 Pre-UR Border Protection

Any evaluation of the liberalizing effect of the Round must begin with an assessment of the protective effects of the measures which preceded it and which would have occurred without it. Had the UR not concluded, presumably these policies, or some variant of them, would have

generated the counterfactual future rate of protection against which the UR should be evaluated. The protective effects of pre-UR trade distortions in a particular market are measured in terms of their tariff equivalents. The UR adopted the price-gap method in establishing the tariff equivalent of non-tariff barriers. This method assumes that the difference between the domestic price and the world price is caused by the restrictive effects of all non-tariff barriers that are present in the market. The UR tariffication procedure required the establishment of initial base tariffs to afford the same level of nominal protection as the prevailing NTBs in 1986-88. That is, the post-UR base tariff, to be set at either specific or *ad-valorem rates,* would be based on the protected domestic and world prices of the relevant commodity in 1986-88. The difference between these prices would be the "price gap" which defines the specific tariff and the percentage difference between them would be the ad-valorem tariff equivalent that would replace the non-tariff barrier.

The exact measure of a non-tariff barrier in terms of its effect on prices is one which compares the domestic price that would prevail without the non-tariff barrier with the price which would prevail domestically with the non-tariff barrier, assuming that the price paid to suppliers remain unchanged. However, since these prices are usually not observable, the actual measure of non-tariff barriers are usually based on a comparison of domestic and world prices in the presence of non-tariff barriers. To apply this method, it is required to identify the appropriate prices. This is difficult because products of a particular industry that are imported into a country are usually not identical to those that are produced domestically, and they may also differ from products that are produced and traded abroad. In general, the appropriate prices to use in measuring the price impact of a non-tariff barrier are the domestic and invoice price of the imported product. Since available domestic prices do not usually distinguish domestically produced goods from imported goods, the price of the product in the domestic market is used instead.

Let P_d represent the price of the product in the domestic market and $P\omega$ as the invoice price of imports inclusive of tariffs and transport costs (c.i.f). The price comparisons are usually expressed as a percentage difference between the prices expressed as follows: $\tau = 100 * [P_d - P\omega]/P\omega$. The latter is referred to as the *ad-valorem* tariff equivalent or the implicit protection associated with the non-tariff barrier. The ad-valorem tariff equivalents of border protection are estimated for each year depending on data availability -- from 1982-93 in developing countries and from 1979-93 in OECD countries.

In the case of exportables, export subsidies can be used to raise the domestic producer price above the world price. They can be specified in the same way as tariffs since an export subsidy is merely a negative export tax. Export subsidies raise the price received by domestic producers and paid by consumers as the domestic price is increased by arbitrage until it equals the subsidy-inclusive price on sales. The *ad-valorem* export subsidy equivalent is expressed as follows: $\psi = [(P_d - P_\omega)/P_\omega] * 100$.

Data on world and domestic prices use were derived from several sources including the Organization for Economic Cooperation and Development (OECD), US Department of Agriculture (USDA), FAO, and the World Bank. These sources are complemented by the information on internal and reference prices in 1986-88 reported in the supplementary tables in the country Schedules. The OECD provides PSE estimates beginning in 1979 for 12 OECD trading blocs and up to 22 commodities or commodity groups. The USDA has extended this coverage to 34 countries and 48 commodities or commodity groups, for the period 1982-93.[11] Four types of measures are included in the OECD and USDA/ERS PSE calculations, namely, market price support, direct income support, indirect income support and other assistance. Price support

[11]I am grateful to Susan Leetmaa for providing the as yet unpublished data on ERS/USDA updates on PSE estimates.

programs, tariffs, and quotas are examples of the first set of measures, while deficiency payments comprised the second group. Indirect income supports and other assistance include input subsidies, capital grants, research etc. To estimate the tariff equivalent of border protection based on the PSE estimates, I consider only the effects of market price support measures (price support, tariffs, quotas, and other NTBs) and exclude the direct and indirect income transfers and other assistance. The tariff equivalents based on data about market price support measures from the OECD and USDA databases are calculated as follows:

(1) $\tau = [(VPIP/VPWP)-1] * 100$

where
- τ = tariff equivalent
- VPIP = value of production at internal prices
- VPWP = value of production at world prices

The value of production at world prices, VPWP, is defined as:

- VPWP = VPIP - MPS where
- MPS = $Q * (P_d - P_\omega)$ or the value of market price support
- Q = volume of production

Therefore, $\tau = (Pd - P\omega)/P\omega$ or $(Pd / P\omega) - 1 * 100$

where P_d is the domestic price and $P\omega$ is the reference (border) price at which purchases from the world market could have taken place. MPS is the value of all market price support -- an estimate of aggregate transfers to producers as a result of measures such as tariffs, import quotas, and other trade barriers. The difference between world prices and internal prices, as a percentage of world prices is the tariff equivalent of border measures. This is measured either as an import tariff (subsidy) or an export subsidy (tax), or both. If domestic prices are above (below) world prices, the price wedge reflects an export subsidy (tax) equivalent for exportables and an import tariff (subsidy) equivalent for importables.

For purposes of comparison, I also estimate a pre-UR tariff equivalent based on the reported internal and reference prices in the country Schedules for the base period, 1986-88. The Modalities defined internal prices at the wholesale level. However, not all countries used wholesale prices in defining their tariff equivalent (e.g. EU's tariff equivalent are based on intervention or threshold prices). Where the wholesale price is not available, I use producer prices as a measure of internal prices. The use of producer prices will result in some slight underestimation of protection by the amount of the producer-to-wholesale marketing margin.

3.2 Post-UR Border Protection

As explained earlier, the tariffication provisions as stated in the Modalities lose legal power once the country Schedules have been mutually accepted by participating countries. I briefly review in this section the rules on tariffication as provided in the Modalities. The methods used in estimating the post-UR tariff equivalents are then discussed.

Tariff equivalents were required to be established at the four-digit level or at the six-digit or more detailed level of the Harmonized System (HS) wherever appropriate, as in the case of certain fruits and vegetables. The Modalities also required that "actual prices, rather than constructed ones (e.g. the threshold price in the EU) be the basis for tariff equivalents." For transformed and processed agricultural products, tariff equivalents were required to be established by multiplying the specific tariff equivalent(s) for the agricultural inputs(s) by the proportion(s) in value terms or in physical terms as appropriate of the agricultural inputs(s) in the transformed processed agricultural products.

The Modalities also specified the external prices to be used in tariffication as the actual average c.i.f. import unit values for the importing country. Where average c.i.f. unit values are not available or appropriate, external prices are defined as the appropriate average c.i.f. import unit

values of a near country or the estimated average f.o.b. unit values of (an) appropriate major exporter(s) adjusted by adding an estimate of insurance, freight, and other relevant costs to the importing country. External prices are converted to domestic currencies using the annual average market exchange rate for the same period as the price data. Internal prices are defined in the Modalities as the representative wholesale price ruling in the domestic market or an estimate of that price where adequate data are not available. The initial tariff equivalents have to be adjusted to take account of differences in quality or variety and applied to tariff lines which are frequently defined at 8, 10, or12 digit levels.

Where a tariff equivalent resulting from these guidelines is negative or lower than the current bound rate, countries were allowed to establish the initial base tariff equivalent at the current bound rate or on the basis of national offers for that product. The levels of tariff equivalents resulting from tariffication using 1986-88 data, supplemented by the rules as stated above, are specified as the base level (i.e. to be applied in 1995) for the implementation of the reduction commitments on market access.

The post-UR nominal border protection rates are derived from the tariffication commitments. In this paper, the specific tariffs in the Schedule, assumed to reflect the difference between internal and border prices as defined in the Modalities, [$T = (P_d - P_\omega)$], are translated into *ad-valorem* tariff equivalents simply by dividing the specific tariff by the appropriate border price as defined in the Modalities. The average border prices in 1986-88 used in estimating the pre-UR tariff equivalents of NTBs are now used to convert the post-UR base specific tariffs in the Schedules into *ad-valorem rates* in the base period. To translate the final or bound specific tariffs in the schedules (tariffs to apply at the end of the implementation period) into final *ad-valorem rates*, I use either (a) constant world prices at the level during the base period, 1986-88 or (b) World Bank projections of world prices for the year 2000.

Since our estimated pre-UR tariff equivalents of NTBs are based on available data on world and domestic prices, which are usually at wholesale or farmgate level, the post-UR specific tariffs, which are at very disaggregated tariff line level in the Schedules, must be aggregated to attempt to match the pre-UR measures. An average specific tariff corresponding to the commodity defined at the 4-digit HS code is calculated by taking a simple unweighted average of the tariffs for the group under consideration. Unweighted tariffs are preferred over trade-weighted tariffs, which may be biased downward because imports that are highly taxed cost more and are, therefore, imported less. In the extreme, a tariff set at sufficiently high level as to eliminate imports would receive no weight in the aggregation.

In the case of commodities where the historical estimates of protection (based on the OECD and USDA data) are defined at the farmgate/first stage of trade, the specific tariffs of the processed items are transformed using appropriate conversion factors.[12] This is not an issue for commodities such as grains (wheat, maize, barley, oats, rye and sorghum) or white sugar, which are reasonably homogenous and whose post-UR tariff equivalents are specified in the Schedules. For dairy, where the historical protection estimates based on OECD and USDA data are for the dairy industry, the post-UR tariffs are adjusted using conversion factors to derive the milk fluid equivalent of milk powder and butter. The estimated *ad-valorem* tariff rates at the 4-digit HS are aggregated to match the commodity and regional definitions of the RUNS model using value of production at border prices.[13] The tariffs specified for "within access" commitments in the tariff-quota are assumed to be infra marginal and only to represent an income transfer.

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[12]For instance, milk is assessed as liquid milk plus fluid equivalent of butter and milk powder in the OECD and USDA calculations of PSE. The same conversion factors for butter and milk are used in this paper to estimate the average specific tariff for the milk industry.

[13] To facilitate further analyses of implications of the Uruguay Round Agreement, the pre- and post-Uruguay Round border protection in agriculture estimated in this paper are further aggregated to conform to the requirements of general equilibrium models.

For exportables, the post-UR border protection will be determined by the export subsidy commitments. As described in section 2, the commitments on export subsidies are in terms of maximum volume and budget outlays defined for major group of commodities. A 36 percent reduction in the value of export subsidies by a particular country would typically require a less than 36 percent reduction in the *ad-valorem* equivalent of the export subsidy since the decline in value would result from changes in both the rate of assistance and in the quantity exported. In the context of multilateral reforms under the Round, reductions in export subsidies are likely to raise world prices, offsetting the reduction in export volumes implied by the reductions in export subsidies. Thus, treating the export subsidy reductions in terms of reductions in export subsidy rates could be used as an approximation to the effects of the commitments. The per unit export subsidy rates at the base period is determined as follows: $s_s = \frac{B_s}{\Psi_s X_s}$ where s is the subsidy rate, B is the total value of export refunds and X is total volume of exports and Ψ is the share of exports that is subsidized. The subscript s denotes the goods which are net exports and use export subsidies. The per unit subsidy rates during the base period are translated to *ad-valorem* rates using border prices in 1986-88. There are goods which are treated as net exportables in estimating historical protection based on the OECD and USDA databases but do not have export subsidy commitments in the Round. In these commodities, some imports occur and the post-UR border protection are estimated based on the tariffication commitments.[14] In most of these commodities, import restrictions are usually an essential backstop for export subsidy programs. The tariff equivalent based on the tariffication commitments defines the maximum post-UR border protection.

[14]The estimates will be slightly biased by the amount of the margin between f.o.b. and c.i.f. prices which in most primary agricultural products are usually not more than 20 percent.

4. Results of Tariffication and Tariff Bindings

4.1 How "Dirty" Was Tariffication?

The UR Modalities specified that the initial base tariffs (specific or ad-valorem) should be set at levels that provide equivalent protection in 1986-88. To examine "dirty" tariffication, the estimated tariff equivalents based on the country Schedules are compared with the estimated tariff equivalent of border measures in 1986-88. The results indicate that the specific and *ad-valorem* tariffs which many countries have set in their schedules are significantly higher than the wedge between actual domestic and world market prices in the base period, hence affording higher protection than prevailed in 1986-88.

Also, the chosen base period of tariffication was a period of relatively high agricultural support and protection in the industrial countries because world prices were at their lowest level in recent decades during the period. Hence, the tariff equivalent based on the 1986-88 period would result in high levels of protection compared with any representative period.

The actual tariff equivalents of all border measures in 1986-88 and the post-UR base tariffs for several major commodities are summarized in Table 2a and 2b. In many countries, "dirty" tariffication appears to have occurred in the "sensitive" commodities such as dairy, sugar, and grains. The extent of "dirty" tariffication varied widely among countries and commodities. Among the industrial countries, the magnitude appears largest in the European Union and EFTA, where the post-UR base tariff equivalents in most commodities were set at levels way above the estimated 1986-88 price wedges. In the European Union (EU), the estimated post-UR ad-valorem tariff equivalents are significantly higher than the actual rates of protection in 1986-88 except for poultry. The largest differentials (in percentage points) are estimated for rice (207 percent), milk (97.2 percent), butter (72 percent), sugar (63 percent), barley (58.5 percent), durum wheat (52.6 percent) and sheepmeat (21 percent).

In the case of wheat, rye, barley, maize, and sorghum, the EU Schedule had set the specific duty-paid import price to be not greater than the effective intervention price (or in the event of modification of CAP, the effective support price) increased by 55 percent (EU Schedule, Section I, Headnotes). This implies that the current effective threshold price for grains would be 155 percent of the intervention price. In the case of rice, the specific duty is set at a level so that the duty-paid import price will not be greater than the effective intervention price increased by 88 percent for Japonica rice and by 80 percent for Indica rice.

Among the EFTA countries, Austria, Finland, Norway, and Switzerland established tariff equivalents which built in the scope for significantly more protection in major commodities, particularly sugar, dairy products, wheat, beef and veal, pork and sheepmeat. The United States also raised base protection in sugar by an estimated 66 percent, while Canada increased base tariffs relative to the actual 1986-88 levels by more than 100 percent in dairy products and more than 200 percent in poultry. Japan offered base tariff equivalents which were way below the actual nominal rate of protection they enjoyed in 1986-88 in all the commodities considered. However, Japan obtained a special arrangement on rice whereby tariffication is delayed, and did anyway start from very high levels.

4.2 Tariff Bindings in Developing Countries

Developing countries had the option of establishing ceiling binding on commodities not previously subject to bound tariffs. The results indicate large variations in patterns of pre-UR protection and post-UR agricultural tariff bindings. As in the industrial countries, many developing countries offered very high base tariffs in several major commodities. In most cases, these bindings were set at levels way above historical protection. Several countries (i.e., Egypt, Pakistan, Zimbabwe), which have maintained import subsidies or export taxes (indicated by

negative historical tariff equivalents) in major food crops, also established maximum ceiling bindings.

In the case of wheat, a major importable in developing countries, significantly higher base tariff equivalents than actual pre-UR levels were established in several countries, including India (+98 percent), Pakistan (+171 percent), Colombia (+118 percent), and Morocco (+210 percent). In the case of rice, several net importing countries also offered higher base nominal protection than actual levels in the base period, with the largest differences occurring in Bangladesh, Colombia, and Mexico. The same occurred in coarse grains, where higher base tariff equivalents were set in Indonesia, the Republic of Korea, Colombia, Jamaica, Mexico, and Morocco. It is interesting to note, however, that these levels of allowable protection are below those historically applied in the industrial countries. In rice, for example, increased allowable base protection are shown in Nigeria, Bangladesh, Pakistan, Indonesia, Thailand, Colombia, Mexico, Egypt, and Czech Republic, but only at levels slightly above one-third of the rates applied in Japan.

Argentina, Brazil, and Chile generally offered lower base tariff equivalents in most commodities (ranging from 25 percent to 55 percent in 1995) than other Latin American countries. For example, the tariff equivalents in 1995 for sugar were established at high levels in Colombia (130 percent), Jamaica (100 percent), Mexico (173 percent), and Venezuela (100 percent). Similar patterns of high base tariff equivalents are observed in these countries for major products such as wheat, coarse grains, rice, dairy products and poultry. In Asia, India has bound most agricultural tariffs at prohibitive levels but established a zero tariff binding on major grains such as rice, sorghum, and maize.

Table 2a. Comparison of Estimated Ad-valorem Tariff Equivalent, 1986-88 and Tariffs Declared in Country Schedules, Percent*

Countries	Rice			Wheat			Coarse Grains			Sugar		
	Estimate 1986-88 (1)	UR Base (2)	Difference (2)-(1)	Estimate 1986-88 (7)	UR Base (8)	Difference (8)-(7)	Estimate 1986-88 (9)	UR Base (10)	Difference (10)-(9)	Estimate 1986-88 (3)	UR Base (4)	Difference (4)-(3)
Industrial												
Australia	13.5	0.0	-13.5	0.7	0.0	-0.7	0.0	0.4	0.4	11.8	52.4	40.6
Canada	na	0.9	na	30.0	57.7	27.7	39.0	34.7	-4.3	39.0	34.7	-4.3
United States	1.0	5.0	4.0	20.0	6.0	-14.0	4.0	8.0	4.0	131.0	197.0	66.0
European Union	153.0	360.5	207.5	103.0	155.6	52.6	133.0	134.4	1.4	234.0	297.0	63.0
Japan	500.0	na 1/	na	651.0	239.6	-411.4	679.0	233.1	-445.9	184.0	126.1	-57.9
New Zealand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	7.2	0.0	2.9	2.9
Austria	0.0	0.0	0.0	188.0	400.0	212.0	108.0	241.0	133.0	183.0	178.0	-5.0
Finland	*na*	*10.0*	*na*	*239.0*	*352.0*	*113.0*	*342.0*	*204.0*	*-138.0*	*265.0*	*493.0*	*228.0*
Norway	na	454.0	na	266.0	495.0	229.0	361.0	394.0	33.0	0.0	na	na
Switzerland	0.0	67.0	na	245.0	179.0	-66.0	226.0	242.0	16.0	277.0	273.0	-4.0
Turkey	na	50.0	na	36.0	200.0	164.0	35.0	200.0	165.0	12.0	150.0	138.0
Developing Countries												
Mexico	6.8	50.0	43.2	-1.0	74.0	75.0	73.0	174.0	101.0	-57.7	173.0	230.7
Colombia	4.0	210.0	206.0	20.0	138.0	118.0	14.0	221.0	207.0	25.3	130.0	104.7
Venezuela	174.9	135.0	-39.9	na	130.0	na	293.0	123.0	-170.0	47.0	100.0	53.0
Thailand	1.0	58.0	57.0	na	64.0	na	na	81.0	na	na	104.0	na
South Africa	na	5.0	na	10.3	74.5	64.2	47.8	68.0	20.2	98.0	124.0	26.0
Indonesia	8.8	180 2/	171.2	na	30.0	na	6.0	70 2/	64.0	87.0	110 2/	23.0
Rep. of Korea	213.8	na 1/	na	na	10.9		421.3	450.0	28.7	na	23.7	na
Mexico	6.8	50.0	43.2	-1.0	74.0	75.0	73.0	174.0	101.0	-57.7	173.0	230.7
Morocco	na	233.5	na	14.0	224.0	210.0	8.0	150.0	142.0	58.3	221.0	162.7
Czech Rep.	14.0	70.0	56.0	-38.0	16.0	54.0	-8.0	20.0	28.0	14.0	70.0	56.0

1/ Delayed Tariffication

2/ Ceiling Binding

* Selected commodities where tariffication was applied and are subject to Safeguards.

Table 2b. Comparison of Estimated Tariff Equivalent, 1986-88 and Tariffs Declared in Country Schedules, Percent*

Countries	Beef & Veal			Pork			Poultry			Dairy		
	Estimate 1986-88 (1)	UR Base 1995 (2)	Difference (2)-(1)	Estimate 1986-88 (3)	UR Base 1995 (4)	Difference (4)-(3)	Estimate 1986-88 (5)	UR Base 1995 (6)	Difference (6)-(5)	Estimate 1986-88 (5)	UR Base (6)	Difference (6)-(5)
Industrial												
Australia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3	6.7	-42.6
Canada	2.0	38.0	36.0	0.0	0.0	0.0	19.0	226.0	207.0	187.0	288.4	101.4
United States	3.0	31.0	28.0	0.0	0.0	0.0	15.0	7.0	-8.0	132.0	144.0	12.0
European Union	83.0	125.4	42.4	40.0	51.7	11.7	51.0	44.5	-6.5	177.0	288.5	111.5
Japan	87.0	38.5	-48.5	99.0	87.3	-11.7	13.0	14.0	1.0	501.0	489.4	-11.6
New Zealand	0.0	0.0	0.0	1.7	20.0	18.3	100.7	28.5	-72.2	0.0	19.6	19.6
Austria	79.0	239.0	160.0	72.0	178.0	106.0	11.0	38.0	3.0	196.0	463.0	267.0
Finland	193.3	394.0	200.7	227.0	320.0	93.0	206.6	264.0	57.4	387.0	389.0	2.0
Norway	145.0	405.0	260.0	255.0	428.0	173.0	614.0	379.0	-235.0	118.0	435.0	287.0
Switzerland	236.0	479.0	243.0	157.0	227.0	70.0	585.0	767.0	182.0	321.0	795.0	474.0
Turkey	-1.4	250.0	254.4	na	250.0	na	11.5	30.0	na	35.0	200.0	165.0
Developing												
Mexico	41.6	50.0	8.4	na	50.0	na	na	217.7	na	3.0	75.0	78.0
Colombia	na	120.0	na	na	120.0	na	na	126.0	na	na	150.0	na
Venezuela	na	50.0	na	na	53.0	na	na	150.0	na	na	96.0	na
Thailand	na	60.0	na	na	60.0	na	na	60.0	na	na	63.0	na
South Africa	*na*	*210.0*	*na*	*na*	*50.0*	*na*	*30.0*	*116.7*	*86.7*	*30.0*	*189.0*	*159.0*
Indonesia	na	70.0	na	na	70.0	na	na	70.0	na	na	154.0	na
Rep. of Korea	95.5	44.5	-51.0	38.7	33.3	-5.4	2.2	26.3	24.1	103.4	220.0	116.6
Mexico	41.6	50.0	8.4	na	50.0	na	na	217.7	na	3.0	75.0	78.0
Morocco	na	315.0		na	45.0	na	na	132.5	na	na	115.0	na
Czech Rep.	134.0	43.0	-91.0	15.0	46.0	31.0	na	36.0	na	-20.0	64.0	84.0

1/ Delayed Tariffication

2/ Ceiling Binding

Source: Author's calculations; basic data are from Uruguay Round country schedules.

5. Changes in Patterns of Border Protection in Agriculture: Pre- and Post-UR

The effective exemption of agriculture from GATT disciplines has facilitated an agricultural policy in OECD countries characterized by strong protection of domestic producers by means of trade restrictions and direct price support, in contrast with policies of developing countries which have effectively taxed agriculture by means of export taxes and overvalued exchange rates. During the 1980s, while many developing countries came under heavy external pressure to liberalize trade, most industrial countries maintained or even increased protection in agriculture. When the UR began in the mid-1980s, the gap between domestic and world prices of agricultural products in OECD countries averaged nearly 80 percent, compared to 41 percent in 1979-81. Figure 1 shows the average nominal protection for agriculture (weighted average using value of production at border prices as weights) in the OECD as a whole and individual countries since the mid-1980s. It shows that only limited policy changes were carried out to reduce border protection during the pre-UR period. Domestic markets in most countries were largely isolated from price movements on the world markets. Most of the reforms, with the exception of New Zealand and Australia, where support levels are already very low, have focused on domestic support mechanisms. Limited reforms were made in reducing export subsidies, import taxes, tariffs and other technical barriers to trade. By 1992, the nominal protection coefficient for agriculture remained at very high levels, estimated at about 74 percent for OECD as a whole. There were considerable variations among countries. The largest price wedges in 1989-92 were in Japan and EFTA countries, and the lowest were in New Zealand and Australia. Among individual commodities, the largest protection was afforded to rice in Japan, with a nominal protection rate of about 480 percent in 1992. Other agricultural commodities heavily protected in the OECD countries include milk, sheepmeat and sugar. Nominal protection in these sectors averaged more than 270 percent during the 1980s.

In contrast, current evidence indicates that domestic agricultural prices in most developing countries remain below international prices, with the greatest taxation occurring in export commodities (Krueger, Schiff, and Valdes, 1988, 1991; USDA, 1994). These policies are not disciplined in the GATT. An important question is how much trade liberalization and how much reduction in protection will be achieved in agriculture following the Uruguay Round. This section provides some quantitative answers to these questions.

5.1 Industrial Countries

European Union

Although the conversion of non-tariff measures to tariffs would bring agriculture closely in line with the rules of the GATT for other products, the tariffication process has eroded the extent of the anticipated liberalization in major commodities in many countries. The high levels of base tariffs after tariffication were due not only to actual high levels of protection in the base period but also to the choice of prices used in establishing the tariff equivalents during the base period. In addition, the tariff bindings in the base period are high relative to the rates of protection resulting under current policies. Even after being reduced by at least 15 percent by the end of the period, the tariff equivalents in many commodities remain higher than the average level of protection in 1982-93.

Estimates of pre- and post-UR border protection in the European Union are shown in Table 3. The European Union has protected its domestic agricultural markets through a complex mechanism of supports. Variable levies keep imports out while domestic price support (guaranteed intervention price) maintains domestic prices well above world prices. When the world price is lower than the threshold price, imports are subject to a levy equal to the difference between the world and threshold price. The amount of protection has been high, with an estimated average nominal protection for crops and livestock products of 171 percent

during 1979-92. The estimates in Table 3 indicate that most commodities in the EU received high protection during the pre-UR period (1979-93), with the highest rates on sheepmeat (155 percent), sugar (150 percent), manufactured milk (128 percent), beef and veal (84 percent), barley (83 percent), rice (82 percent), maize (69 percent) and durum wheat (58 percent). Oats, poultry meat, and pork received relatively lower protection, ranging from 20-37 percent.

During the UR negotiations, the EU had begun to reform its Common Agricultural Policy by reducing the level of price support and providing direct income compensation payments to farmers instead. Combined with increases in world prices, these reforms resulted in a decline in the rate of border protection in most commodities since the base period (1986-88). This is shown in Table 3 where the average tariff equivalents of border measures in recent years (1989-93) are below the levels in 1986-88 in the case of grains, sugar, other meat (poultry and pork), and dairy products. The pattern of post-UR protection in the EU would depend on the level of world prices and the maximum tariff allowed in the GATT. Further, additional protection can be applied on all imports under the Special Safeguards against low world prices. The EU provided an additional commitment on its tariff for grains in the form of a maximum duty-paid price linked to the intervention price. That is, for major grains the duty-paid import price shall not exceed a domestic intervention price plus 55 percent, and for husked rice it shall be no greater than the intervention price plus 80-88 percent. The 55 percent and the 80-88 percent appear to represent the mark-up between the threshold price and intervention prices for major grains and rice, respectively, under CAP reform.

Table 3. European Union Border Protection

HS Code	Commodity	Post-UR Tariffs Equivalent Base rate (1986-88 Prices)	Post-UR Tariffs Equivalent Final rate (1986-88 Prices)	Final rate 2000 Point	Final rate 2000 Lower Bound	Final rate 2000 Upper Bound	Pre-UR Tariffs Equivalent 1986-88 (%)	Pre-UR Tariffs Equivalent 1989-93 (%)	Pre-UR Tariffs Equivalent 79-93 (%)	"Dirty" tariff-ication Base - Pre-UR	Change in protection Final - 89-93	Change in protection Final - 79-93	Change in protection Final / Base
0201,2	Beef & Veal	125.4%	80.3%	69.8%	61.7%	73.0%	83.0	97.0	84.0	42.43	-16.73	-3.73	-36.0%
							125.4						
0203	Pork	51.7%	32.9%	28.6%	25.3%	29.9%	40.0	25.0	23.0	11.70	7.90	9.90	-36.4%
							38.1						
0204	Mutton & Lamb	210.5%	134.7%	117.1%	103.6%	122.5%	189.0	95.0	155.0	21.48	39.70	-20.30	-36.0%
							248.1						
0207	Poultry	44.5%	28.5%	24.7%	21.9%	25.9%	51.0	42.0	36.0	-6.52	-13.54	-7.54	-36.0%
							69.5						
	Manufactured Milk*	288.5%	204.8%	178.1%	157.5%	186.2%	177.0	147.0	128.0	111.50	57.79	76.79	-29.0%
0402	Milk powder	170.8%	127.6%	111.0%	98.2%	116.0%							
040210	Skim Milk Powder	229.0%	183.1%	159.3%	140.9%	166.5%	*188.1*			*40.9%*			-45.9%
04022110	Whole Milk powder	143.9%	92.1%	80.1%	70.8%	83.7%							
04022190	Other	81.3%	52.1%	45.3%	40.1%	47.3%							
0405	Butter	348.6%	208.3%	181.1%	160.2%	189.3%							-140.3%
0407	Eggs	68.4%	43.7%	38.0%	33.7%	39.8%	23.03	15.39	13.00	45.33	28.36	30.75	-36.0%
100110	Durum Wheat	155.6%	99.7%	74.9%	70.2%	84.5%	103.0	77.1	58.3	52.56	22.56	41.36	-35.9%
							69.3						
100190	Common Wheat	172.3%	109.8%	82.6%	77.3%	93.1%	106.6	67.1	56.4	65.65	42.73	53.43	-36.2%
							81.7						
1002	Rye	86.3%	138.2%	103.9%	97.3%	117.1%		61.3					51.9%
							187.1						
1003	Barley	215.5%	138.2%	103.9%	97.3%	117.1%	*157.0*	95.0	83.0	58.45	43.19	55.19	-35.9%
							187.1						
1004	Oats	123.6%	79.1%	59.5%	55.7%	67.0%	56.0	46.0	37.0	67.56	33.11	42.11	-36.0%
							64.9						
1005	Maize	160.0%	102.3%	76.9%	72.0%	86.7%	109.0	89.0	69.0	50.96	13.29	33.29	-36.1%
							121.3						
1006	Rice	360.5%	230.6%	173.4%	162.4%	195.5%	153.0	103.0	82.0	207.53	127.63	148.63	-36.0%
							148.5						
10062055	Husked (brown rice)	407.6%	260.6%	195.9%	183.5%	220.8%							
100630	Semi-milled or wholly mi	362.9%	232.2%	174.6%	163.5%	196.8%							
100640	Broken rice	311.1%	199.1%	149.7%	140.2%	168.7%							
1007	Sorghum	171.5%	109.7%	82.5%	77.2%	93.0%	*125.4*						-61.8%
Oils(a) and oilseeds													
1201	Soybeans	0.0%	0.0%	0.0%	0.0%	0.0%							
1507.10	Soybean oil	10.0%	6.4%	6.4%	6.4%	6.4%							
1202	Peanuts	0.0%	0.0%	0.0%	0.0%	0.0%							
1508.10	Peanut oil	10.0%	6.4%	6.4%	6.4%	6.4%							
1205	Rapeseed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.00	0.00	0.00	0.0%
							157.2						
1514.10	Rapeseed oil	10.0%	6.4%	6.4%	6.4%	6.4%							
1206	Sunflower seed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.00	0.00	0.00	0.0%
	Sugar**												
121291	Sugar beet, dried or powd	275.7%	220.1%				234.0	144.0	150.0	41.65	76.14	70.14	-20.1%
170111	sugar (for refining)	296.9%	279.4%	151.8%	94.7%	273.9%	234.0	144.0	150.0	62.86	135.35	129.35	-5.9%
							216.9						
	White Sugar						234.0	144.0	150.0				
							216.9						
2401.10	Tobacco	14.0%	11.2%	11.2%	11.2%	11.2%							
5101	Wool	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.00	0.00	0.00	0.0%
5201	Cotton, Not carded or com	1.4%	0.0%	0.0%	0.0%	0.0%							
5301	Jute	0.0%	0.0%	0.0%	0.0%	0.0%							
AGGREGATION OF COMMODITIES													
1	WHEAT	170.1%	108.5%	81.6%	76.4%	92.0%	106	68	57	64.0	13.2	25.0	-36.2%
2	RICE	360.5%	230.6%	173.4%	162.4%	195.5%	153	103	82	207.5	70.4	91.4	-36.0%
3	COARSE GRAINS	189.3%	121.3%	91.2%	85.4%	102.8%	133	89	74	56.7	2.3	16.7	-35.9%
4	SUGAR	297%	279%	152%	95%	274%	234	144	150	62.9	7.8	1.8	-5.9%
5	MEAT	96.1%	86.9%	75.6%	66.8%	79.0%	96	97	93	0.2	-21.2	-17.1	-9.6%
6	OTHER MEAT	52.9%	33.7%	29.3%	26.0%	30.7%	40	27	24	-2.5	2.2	5.2	-16.4%
7	COFFEE	12.8%	6.2%	6.2%	6.2%	6.2%	na	na	na				
8	COCOA	8.3%	4.3%	4.3%	4.3%	4.3%	na	na	na				
9	TEA	2.5%	0.8%	0.8%	0.8%	0.8%	na	na	na				
10	OILSEEDS	0.0%	0.0%	0.0%	0.0%	0.0%	na	na	na	0.0	0.0	0.0	0.0%
11	MILK	288.5%	204.8%	178.1%	157.5%	186.2%	177	147	128	111.5	31.1	50.1	-29.0%
12	FRUITS & VEGETABLE	18.1%	13.2%	13.2%	13.2%	13.2%	na	na	na				
13	WOOL	0.0%	0.0%	0.0%	0.0%	0.0%	na	na	na	0.0	0.0	0.0	0.0%
14	COTTON	1.4%	0.0%	0.0%	0.0%	0.0%	na	na	na				
15	OTHER NON FOOD	14.0%	11.2%	11.2%	11.2%	11.2%	na	na	na				
Average (unweighted)		100.8%	73.4%	54.4%	47.0%	66.4%	62.546	45.009	40.53				-27.2%
standard deviation		127.2%	95.6%	66.7%	57.1%	88.0%	80.365	56.846	52.71				

**Conversion factors: 1 ton of White Sugar = 1.356 ton of Raw (cane) sugar = 6.854 ton of Sugar beet

In italic: estimates of historic protection from EEC data in schedule

Estimates are the wedge between EU internal market prices and world prices (c.i.f. Rotterdam)

Pre-UR Border Measures

Price intervention: Internal prices are kept above world prices by variable levies tied to a minimum import price and the insulation of the domestic market from surpluses by intervention buying or export subsidies

Source: Author's calculations; basic data are from Uruguay Round country schedules.

Hence, this provision allows the EU to charge tariffs at levels necessary to defend its already set threshold prices under CAP reform, as long as the duty charged does not exceed the binding. In practice, this can work similarly to a variable levy or a minimum price. The actual import tariff levied on c.i.f. prices would be the difference between the domestic mark-up and the world price (c.i.f). Hence, in periods of particularly low world prices, the EU will probably charge a high tariff so as to maintain the agreed "Community preference" but at a level not exceeding the tariff binding. If world prices are high, the EU border regime may not in practice be much different from what it would have been under CAP reform. That is, when world prices are high, the EU will charge a lower tariff so as not to exceed the commitment on "maximum duty-paid import price" to maintain the level of threshold prices already set under CAP reform policies. The determination of the actual tariff on grains would however be shipment specific, in contrast to the pre-UR regime where the levy, calculated as the difference between the threshold price and a world price determined by the Commission, is charged on all imports irrespective of the actual price of the shipment. Under the GATT commitment, the actual tariff will be calculated based on the price of the specific grain shipment to ensure that the duty-paid price for each shipment will not exceed 155 percent of the intervention price.

Based on World Bank world price projections, the ad-valorem equivalents of the bound specific tariffs for major agricultural commodities are shown in Table 3. Relative to average protection levels in recent years and in the base period (1986-88), the post-UR base and final tariff equivalents are significantly higher in most commodities. The difference is even larger when compared with the average during 1979-93. If the EU applied the maximum specific tariffs committed in the UR, the estimated post-UR ad-valorem tariff equivalents in 1995 and 2000 indicate significant potential increases in protection in major commodities relative to recent levels and relative to the average protection over the last fifteen years.

The estimates also provides evidence of uneven reductions in tariffs among commodities, with the smallest percent reduction in "sensitive" commodities such as sugar. The uneven tariff cuts also appears to result in higher dispersion in protection in the base and final period than in the pre-UR regime.

Japan

In Japan, a complex system of fixed and variable levies has kept internal prices well above world prices. Protection for all major commodities in Japan is provided largely through administered prices maintained by tariffs and import restrictions. Japanese raw sugar prices, for instance, were eight times the world price in 1985-86, while rice and wheat prices were more than six times the world price during the same period. Estimates of pre- and post-UR border protection for Japan are shown in Table 4.[1] Border protection has fallen in recent years, but remains very high in rice, dairy products, wheat, barley and sugar. In contrast, protection in the Japanese beef sector has declined from 70 percent to 60 percent in 1992 and to 50 percent in 1993. Interestingly, Japan appears to have carried out significant reductions in protection in major commodities in the UR as shown by the estimates in Table 4. Japan committed to further reduce the ad-valorem tariff on beef to 38.5 percent. However, the post-UR tariff equivalents for milk, sugar, and wheat remain prohibitive. Japan agreed to convert all NTBs to tariffs, except for rice, where tariffication was delayed but a higher minimum access commitment (4-8 percent of domestic consumption over the implementation period) is provided.

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[1] The estimates of pre-UR protection are based on prices used by the OECD in estimating Producer Subsidy Equivalents. The pre-UR ad-valorem equivalent on wheat based on government resale prices results in lower protection (279 percent) than is reported in the Table 4, but remain higher than the post-UR base period estimates. Further analysis will be done to estimate the pre-UR ad-valorem equivalents based on resale prices for other commodities.

Table 4. Japan Border Protection													
	Commodity	Post UR Tariff Equivalent		Final Rate 2000	Final Rate 2000	Final Rate 2000	Pre UR border protection Tariff equivalent			Dirty Tariffication	Change in protection		
		Base (1986-88 prices)	Final	Point	Lower Bound	Upper Bound				86-88 Base-	Final-	Final-	Final/
							79-93	86-88	89-93	Pre-UR	89-93	79-93	Base
AGGREGATION OF COMMODITIES													
1	WHEAT	239.6%	202.7%	152.4%	142.8%	171.8%	308.%	651.%	492.%	-411.4	-340	-156	-15%
2	RICE						203.%	500.%	402.%				
3	COARSE GRAINS	233.1%	197.7%	148.6%	139.2%	167.5%	336.%	679.%	566.%	-445.9	-417	-187	-15%
4	SUGAR	126.1%	107.2%	57.9%	36.3%	105.1%	126.%	184.%	155.%	-57.9	-97	-68	-15%
5	MEAT	93.0%	38.5%	38.5%	38.5%	38.5%	30.%	87.%	40.%	6.0	-2	9	-59%
6	OTHER MEAT	49.8%	48.2%	48.2%	48.2%	48.2%	43.4%	55.1%	62.7%	-5.2	-14	5	-3%
7	COFFEE	10.0%	6.0%	6.0%	6.0%	6.0%							-40%
8	COCOA	4.4%	1.9%	1.9%	1.9%	1.9%							-57%
9	TEA	16.3%	12.3%	12.3%	12.3%	12.3%							-25%
10	OILSEEDS	0.0%	0.0%	0.0%	0.0%	0.0%	0.%	0.%	0.%	0.0	0	0	0%
11	MILK	489.4%	424.2%	326.3%	286.6%	372.1%	207.%	501.%	389.%	-11.6	-63	119	-13%
12	FRUITS & VEGETABLES	16.3%	13.3%	13.3%	13.3%	13.3%				16.3			-18%
13	WOOL	0.0%	0.0%	0.0%	0.0%	0.0%							0%
14	COTTON	0.0%	0.0%	0.0%	0.0%	0.0%							0%
15	OTHER NON FOOD	0.0%	0.0%	0.0%	0.0%	0.0%							
	Average (Unweighted)	91.3%	75.1%	57.5%	51.8%	66.9%	156.7%	332.1%	263.3%				
	Standard deviation	136.9%	118.5%	89.8%	80.1%	103.0%	119.4%	261.7%	209.2%				

Conversion factors:
Pork: Boneless = 1.36 carcass weight
1 ton of White Sugar = 1.356 ton of Raw (cane) sugar
*Not for sowing
Pre UR border measures

Price stabilization on Sugar; imposes levies and surcharges on imported sugar when import prices are low.
The Food Agency controlled the purchase and marketing of domestic and imported Barely, Rice and Wheat. It also regulates imports of dairy products and most beef.

Source: Author's calculations; basic data are from Uruguay Round country schedules.

North America and Australia

In the United States, tariffication has a direct effect on the policies for beef, sugar and dairy products. Both sugar and milk are assisted through administered prices, which are supported by tariffs and import quotas. The Meat Import Law and associated voluntary export restraint arrangements (VERs) have been the main source of protection for the US beef industry. On main export products, the Export Enhancement Program (EEP) provides a discretionary authority to provide export subsidies. The pre- and post-UR rates of border protection are shown in Table 5. The post-UR base ad-valorem tariff equivalents of import quotas indicate higher level of protection than those applying in the base period, 1986-88. In addition, sugar and dairy products will remain highly protected with very high tariffs charged at the end of the implementation period.

Table 5. United States Border Protection												
Commodity	Post UR Tariffs Equivalent		Final Rate	Final Rate	Final Rate	Pre UR Tariff equivalent			Dirty tariffication	Change in protection		
	Base rate	Bound rate	2000	2000	2000				86-88 Base -	Final -	Final -	Final /
	(1986-88 prices)		Point	Lower Bound	Upper Bound	82-92	86-88	89-93	Pre-UR	89-92	82-92	Base
AGGREGATION OF COMMODITIES												
1 WHEAT	6%	4%	4%	4%	4%	13%	20%	20%	-14	2	14	-36%
2 RICE	5%	3%	3%	3%	3%	1%	1%	2%	4	1	-1	-36%
3 COARSE GRAINS	8%	2%	2%	2%	2%	2%	4%	2%	5	-65	-124	-74%
4 SUGAR	197%	168%	91%	57%	164%	126%	131%	67%	67	89	166	-15%
5 MEAT	31%	26%	26%	26%	26%	2%	3%	2%	27	25	24	-15%
6 OTHER MEAT	4%	3%	3%	3%	3%	2%	6%	1%	0	3	5	-36%
7 COFFEE	0%	0%	0%	0%	0%	0%	0%	0%				0%
8 COCOA	0%	0%	0%	0%	0%	0%	0%	0%				-60%
9 TEA	3%	2%	2%	2%	2%	2%	2%	2%				-36%
10 OILSEEDS	0%	0%	0%	0%	0%	0%	0%	0%	0	-46	-92	0%
11 MILK	144%	122%	93%	83%	107%	92%	132%	46%	12	93	122	-15%
12 FRUITS & VEGETABLI	91%	77%	77%	77%	77%							-16%
13 WOOL	7%	4%	4%	4%	4%	8%	7%	8%	0	4	4	-42%
14 COTTON	31%	26%	26%	26%	26%							-15%
15 OTHER NON FOOD	19%	8%	8%	8%	8%							-56%
Average (Unweighted)	36%	30%	23%	20%	28%	21%	25%	13%				
Standard deviation	60%	52%	35%	29%	49%	42%	50%	22%				

Conversion factors:
Boneless = 1.36 carcass weight; Carcass weight = 1.85 Live animal
1 m3 of Fresh table grapes = 1.72866 MT
OECD reference prices used for Beef and Veal, Pigmeat, Sheepmeat, Sugar and Wool
Import unit values used in all other commodities
Source: USDA (89-93), 86-88: adjusted using rate of growth in UN trade data
Pre UR border measures:
Import tariffs; Barley, Poultry, Rice, Wheat; Price support/quotas; Milk, Sugar; Tariffs and Beef Purchases; Beef and Veal
(a) except Manufactured milk, Barley, oats, rye: USDA
(b) Beef and Veal, Manufactured milk and Sugar represent CIF prices.
Source: Author's calculations; basic data are from Uruguay Round country schedules.

In Canada, production of milk, dairy products, poultry meat, and eggs received high protection during the pre-UR period through support from stabilization programs, transportation subsidies and quantitative import restrictions. In Australia, the progressive reduction in the tariff imposed on sugar has made the sector more exposed to international markets, but the remaining tariff still provides a significant amount of protection. Prior to the late 1980s, there was an administered home consumption price on sugar which, on average, resulted in negative rates of protection.

5.2 Developing Countries

The UR negotiations provided the opportunity for developing countries to increase their integration into the international trading system. For the first time, many countries participated in the negotiations and increased the extent to which their domestic protection will be subject to tariff bindings. Developing countries as a whole increased the proportion of agricultural product lines subject to tariff bindings from 18 to 100 percent (GATT, 1994). However, the extent to which developing countries choose to use tariff bindings, and the resulting patterns of liberalization varied considerably by commodity and by country. Some countries used the Round to lock in and consolidate recent unilateral and/or bilateral liberalizations while others, particularly the least-developed ones, made no substantial liberalization commitments. Developing countries were allowed to offer tariff ceiling bindings (arbitrarily chosen maximum levels) in commodities with previous unbound tariffs, and were required to commit lower reduction obligations (two-thirds the level in industrial countries) to be implemented over a longer transition period (ten years). Agricultural subsidies for food security, investment, input, transport and marketing were exempted from reductions. In addition, the most prevalent trade distortions in developing countries, namely import subsidies, export taxes, state-trading import monopolies are not disciplined in the Round.

Latin America

Most countries in the region began unilateral trade reforms in the late 1980s or early 1990s and have overtaken the UR process in reducing tariffs and NTBs. Tariff reductions have been significant in Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela since the mid-1980s.[1] These countries consolidated recent liberalization in the UR and have tariffied remaining

[1]In addition, there has been increased free-trade arrangements among countries in the region, for instance, in the southern cone common market (MERCOSUR), and Caribbean Community (CARICOM).

NTBs in several commodities. A number of countries (e.g. Brazil) have also offered additional reductions in protection on several commodities. However, some countries have set their post-UR bound rates above current applied rates, potentially resulting in increased applied border protection after the Round. For instance, Colombia established bound tariffs which are significantly higher than historical protection levels for durum wheat (124 percent), barley (144 percent), maize (194 percent), sorghum (132 percent), soybeans (125 percent) and sugar (117 percent). The average tariff equivalent of nominal border protection for these commodities ranged between 3-20 percent in 1982-92. In contrast, Venezuela committed tariff bindings which are significantly lower than those applying in the base period for the commodities considered, while Chile appears to have committed final bindings at or below the previous bound rates.[2]

In Mexico, price support and import controls and licensing have afforded producers significant protection in most commodities, particularly in maize, wheat, barley, sorghum and soybeans. The post-UR tariff equivalents indicate reduced protection in maize and soybeans but increased protection in barley, rice and durum wheat. In commodities with no pre-UR tariff bindings, the post-UR bound rates in some countries are sometimes higher than the initial base tariffs (i.e. applied rates in September 1986). In Brazil and Uruguay, for instance, the bound tariff for beef and veal is set at 55 percent, compared with a base tariff of 25 percent. Quantitative restrictions on imports dominated by export taxation characterized Brazil's trade regime prior to 1993, indicated by the negative pre-UR tariff equivalents in most commodities. The average tariff was reduced from 32 percent in 1990 to about 14 percent in 1993, with a maximum tariff set at 35 percent. The post-UR tariff bindings in Brazil and Uruguay indicate an increase in the maximum tariff from 35 percent to 55 percent.

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[2] Chile sets an annual price-band to protect wheat, sugar, and vegetable oils from imports. Domestic prices are maintained within the band by either adding an additional tariff to the uniform tariff level or by lowering the uniform tariff. Chile's uniform import tariff since June 1991 is 11 percent, with preferential rates set for member countries of ALADI (Latin American Integration Association).

Other Latin American countries committed nearly uniform tariff bindings in most agricultural commodities: Bolivia (40 percent), Paraguay (35 percent), Honduras (35 percent), Dominican Republic (40 percent), Peru (30 percent, except in wheat, milk, and butter set at 68 percent).

Asia

The extent of agricultural liberalization in Asian countries as a result of the UR varied among commodities and countries. In general, however, the reductions in border protection as a result of the UR will be modest in many commodities in Asian countries. The results indicate that several countries in Upper-Income Asia committed to further reduce border protection in some major commodities while others, particularly South Asian countries, will not liberalize agriculture under the Round. On the contrary, the Round may potentially increase protection in agriculture if applied rates are increased from current levels towards bound levels. The tariff commitments in low-income Asian countries do not represent any meaningful liberalizations and are unlikely to address the key distortions in trade policies.

Most countries in the region, as in other least-developed regions, were given the flexibility to establish general or specific tariff bindings (which defines maximum protection levels over the next ten years) at levels significantly above historical protection rates. In some countries, the effect of the high tariffs on domestic resource allocation are neutralized by government controlled prices, which in many cases are kept below world prices. This negative protection or taxation in some countries were not disciplined in the Round.

Most least-developed countries in Asia were able to bind their tariffs at a maximum level (ceiling binding) or reduce already bound rates, which in many cases were above the current applied rates. Several countries introduced ceiling tariff bindings at levels far above the pre-UR

levels of protection. For instance, the ceiling bindings in most commodities were set at very high levels in Bangladesh (200 percent), Pakistan (100-150 percent), India (100-150 percent) and Myanmar (168 percent). India has bound most agricultural tariffs at prohibitive levels. For instance, the UR base protection for sugar was set at 75 percent, meats and tree crops at 140 percent, and dairy products at 45 percent. Wheat, which was taxed at -13 percent in 1982-93, received a tariff binding of 100 percent, while oilseeds, cotton, tobacco, and jute received a tariff binding at 100 percent. For other food grains (corn, rice and sorghum), protection rates shifted from small positive levels in 1986-88 to negative levels since 1989, as hikes in world prices were not transmitted to domestic producers. Interestingly, the post-UR tariffs for these commodities were bound to zero. This implies that the Indian state trading import monopolies in these products cannot maintain internal prices above world prices during the implementation period.

Agricultural protection in the Republic of Korea has historically been achieved through import bans, quotas and tariffs, state trading and producer price supports. The pre-UR protection was particularly high for major crops and livestock products. For instance, the average tariff equivalent of border measures in 1982-92 was very high in wheat (272 percent), rice (232 percent), coarse grains (327 percent), sugar (139 percent), meat (186 percent), oilseeds (338 percent) and dairy products (118 percent). Relative to the average tariff equivalents in 1982-92, the final UR tariff equivalents indicate significant reduction in allowable protection in beef and veal (-144 percent), pork (-29.8 percent), poultry (-17 percent), and eggs (-21 percent), but increased allowable protection in milk (57.6 percent) , barley (73 percent), corn (132.6 percent), and soybeans (149.2 percent) compared with the average protection in 1989-92 and 1982-92.

Similar patterns are observed in Indonesia, where a comparison of pre- and post-UR tariff equivalents indicate very high bindings in corn (65.5 percent), rice (171 percent), and sugar (23.3 percent), but reduced protection in soybeans (47.2 percent).

Africa and the Middle East

Most African countries have taxed agriculture either explicitly, for example, by controlling domestic prices below world prices, or implicitly by giving higher protection to industry. The pattern of taxation varied by commodity, but African countries have traditionally given more protection to food crop producers than cash crop producers, who are often taxed. In Nigeria, for example, food crops were heavily protected with average nominal protection in 1982-92 largest in corn (452 percent), wheat (190 percent), rice (137.2 percent) and sugar (29.4 percent). In contrast, coffee and cocoa producers were taxed during the same period. In Senegal, soybeans, rice, and sorghum producers received significant protection in the 1980s, while peanut producers were often taxed.

Trade policy reforms during the 1980s centered on removal of quotas or licensing restrictions and changes in the tariff structure. Export promotion policies include reduction of export taxes and quotas, exchange rate reforms, allowance for duty-free imports for exporters, and introduction of export subsidies. On average, producers were taxed in the early 1980s. In Egypt, Nigeria, and Tanzania, these taxes were quite high. In more recent years, taxes have declined and in some cases, subsidies have replaced taxes. For example, Nigeria's sugar and cotton producers were taxed until 1985. Since then, these sectors have received positive protection, ranging from 20 percent-50 percent. In contrast, protection in the food crop sector has declined during the 1980s, following the unilateral trade policy reforms. Nigeria's average protection on the rice sector, for example, declined from more than 217 percent in 1982-85 to about 3 percent in 1989-92.

Participating African countries have bound 100 percent of their tariff lines in agriculture, with most countries committed to have uniform tariff ceiling bindings in all agricultural commodities in lieu of reduction commitments. However, the level of the tariff bindings in most countries is at prohibitive levels (100-300 percent), and is set way above pre-UR levels of

protection in most food crops. The highest levels of uniform ceiling bindings are in Nigeria (230 percent), Senegal (180 percent), Zimbabwe (150 percent), Kenya (100 percent), Cameroon (80 percent) and Gabon (60 percent). In contrast, relatively lower uniform tariff ceiling bindings (less than 50 percent) for all agricultural commodities were committed by other countries such as Congo (30 percent), Madagascar (30 percent) and by the South African Customs Union (South Africa, Swaziland, and Namibia). In South Africa, duties will decline by more than 40 percent on average, from more than 70 percent to 40 percent over six years. Very few of the African countries offered reduction in their ceiling bindings, with only Cote d'Ivoire, Ghana, and Zimbabwe offering minimum reduction on several commodities. In some countries with previously bound tariffs, reduction commitments were made on their previous bound rates, but other duties and charges are then added. For example, the bound tariff for fluid milk in Cote d'Ivoire was reduced from 7 percent to 6 percent, but a 200 percent was added for other duties and charges. Other countries did not offer to cut previous bindings, with additional duties and charges listed in their schedules.[3] If these other duties and charges are applied, the result will be a substantial increase in protection on these products. Other countries, such as Tunisia established tariff bindings in the range of 90 percent to 190 percent. As in other developing countries, these ceiling bindings define the maximum allowable protection in agriculture during the post-UR period. In the case of cash crops, where the pre-UR trade policy regime effectively taxed the sector, the UR did not provide direct disciplines.

In North Africa and the Middle East, some countries have moved from taxing agriculture to subsidizing the sector since the mid-1980s. Most countries have restricted imports through non-tariff barriers such import bans and quotas, import licenses, state monopolies, and other similar

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[3] The other duties and charges listed in the schedules as part of the new bindings should be equivalent to the actual applied rates in April 15, 1994 (Article II:1 (b)). Trading partners can challenge these rates during a three-year period after the enforcement of the commitment or the entry into force of the WTO. The other duties and charges were added to the post-Uruguay Round tariff bindings estimate in African countries.

measures. Most countries promote self-sufficiency policies for major staple foods such as wheat, barley and meats by administered prices, state monopolies and restrictions on imports. In recent years, many countries have been moving towards liberalization and reducing input and consumer subsidies. With few exceptions (e.g. Egypt), most countries in the region, however, did not commit to further liberalization in most of agricultural commodities in the Round. Most countries will continue to protect and support the domestic production of wheat, coarse grains, sugar, and meat by the end of the UR implementation period.

In Morocco, for instance, while some steps have been taken toward liberalization in recent years, the UR commitments indicate no or very little liberalization in most commodities. Recent reforms to liberalize trade include the removal of a few import restrictions and liberalizing the exchange rate. Also, producer prices for major grains such as durum wheat, barley, and corn were removed since 1990. However, import licenses have been maintained for many commodities and state-trading enterprise continue to monopolize imports of grains, vegetable oils, sugar, and other commodities. Most commodities were alternately taxed or protected at low rates during the pre-UR period. For instance, over 1982-89, wheat was alternately subsidized or taxed. The taxes peaked at nearly 8 percent, while protection peaked at more than 12 percent. In 1989, when hard wheat was liberalized, the level of protection dropped substantially. Sugar was taxed during most of the period, except in 1984-85 when world prices fell substantially and currency devaluation yielded positive protection. Sugar protection declined from a high of 46 percent in 1984 to 32 percent in 1989 as the wedge between official producer prices and the farmgate border equivalent price narrowed. In recent years, the average import tariff for all agricultural commodities is below 25 percent, with a low tariff (2.5 percent) imposed on grains, and a high tariff of 45 percent charged on imports of meat and dairy products to encourage domestic production. In addition to the customs tariff, an additional ad-valorem tax rate of 15 percent, as well as other fees are

charged on all imports. In the UR, Morocco established tariff equivalents which provide potentially higher rate of protection for most agricultural products. The bound tariffs submitted by Morocco were substantially higher than the actual tariff equivalent rates during the base period. Although these tariffs are to be reduced by 24 percent, most commodities could receive higher protection rates at the end of the UR implementation period relative to the pre-UR period. In the case of wheat, for instance, the bound tariff was set at 190 percent for durum wheat in 1995 declining to 144 percent in 2004, which is still higher than the estimated tariff equivalent at 130 percent in 1986-88. Other commodities also obtained significantly higher tariff bindings in the Round, resulting in no liberalization after the implementation period. For instance, the level of trade weighted average post-UR tariffied protection is highest in beef and veal (239 percent), lamb and mutton (289 percent), poultry (101 percent), sugar (168 percent), rice (177 percent), and oilseeds (215 percent). In contrast, the bound tariffs on fruits and vegetables were set at relatively low levels (34 percent).

Given the range of applicable modalities in establishing the final concessions, it appears that participating countries chose the most politically feasible for each commodity. Political considerations involved domestic conditions as well as the position that could be sustained in bilateral concessions given that a country was also negotiating to obtain access and lowest protection applied on their exports.

In general, most developing countries committed a general ceiling binding in less traded or less important commodities subject to unbound duties. For these commodities, developing countries have the flexibility in the future to raise protection to some extent if desired, as current applied rates are generally lower than the final ceiling binding. For politically sensitive products subject to unbound tariffs at the beginning of the Round, most developing countries offered a specific ceiling binding, which also provided potential increased protection in these commodities in

the future. The results indicate that tariffication provided countries the opportunity to raise tariffs that were already bound at the beginning of the Round and raise tariff bindings above applied rates or, in the case of the industrial countries, raise previously bound and/or applied tariffs whether or not they were bound.

The high levels of tariff bindings resulting from the Round may have adverse effects on developing country agriculture. First, the outcome indicates that the Round may not result in much agricultural liberalization in practice in most developing countries, and may actually raise protection in some cases if the tariff bindings are actually applied. While the actual implementation remains uncertain, the high level of bindings provide a negative signal toward liberalization. The new transparency in import protection, while a significant reform, was achieved at the expense of real reductions in trade distortions. Second, the high level of tariff commitments may undermine the initial objective to remove non-tariff barriers such as variable levies. Countries can still impose tariffs at varying rates below the margin of the binding, which could be tied to a domestic controlled price. The tariff can be set as the difference between the domestic price and the world price as long as the applied tariff is below the bound rate. In practice, this may operate similarly to a variable levy, which is illegal under GATT. Third, the high level of tariff bindings may allow countries to apply varying tariff rates within the bound rates, thus weakening the goal to stabilize and make protection transparent. In addition, most of the bound rates are set too high to provide an effective cap to facilitate security of market access.

6. How Much Agricultural Liberalization Was Achieved in the Uruguay Round?

As indicated above, any evaluation of the liberalizing effect of the Round requires an assessment of the protective effects of the measures which preceded it and which would have occurred without it. Had the UR not concluded, then presumably these policies, or some variant of

them, would have generated the counterfactual rate of protection against which the UR should be evaluated. To measure the extent of liberalization, the estimated post-UR border protection is compared with two hypothesized counterfactual rate of future protection without the Round. The first is based on the average of the longest available sample, 1982-93. This is based on the argument that border protection in agriculture is inherently unstable, reflecting variations in world prices and stable (politically fixed) internal prices. This also assumes that there has been no underlying upward trend in the level of protection and that the distribution of protection during 1995-2000 would be the same as in the historical sample. The second baseline is based on the average protection in recent years (1989-93). This is based on the argument that the recent decade has seen structural shifts in trade policies with many developing countries and some industrial countries undergoing unilateral and/or bilateral reforms, while others, particularly most industrial countries, have shown the tendency to maintain or increase protection in agriculture.

The use of the average protection over the the longest sample rather than more recent or current levels as a counterfactual has important implications for the liberalization estimates depending on whether the long-term average is above or below the current levels of protection. In general, in countries where protection levels have increased over time, such as in several OECD countries (e.g. EU, Japan and EFTA) and some East Asian developing countries (e.g. Republic of Korea), the long-run average protection is below more recent levels. Hence, lower estimates of liberalization may result when the long-run average is compared with the phased-in post-UR protection levels, than when a more recent average is used as benchmark. Also, the actual ad-valorem equivalents of the post-UR specific tariffs will be influenced by future world price changes. The estimates presented in this section are based on current World Bank world price projections.

Annual estimates of post-UR border protection for the period 1996 to 2002 are constructed using the benchmark and final offers and interpolating over the phase-in period, assuming equal annual reduction.[4] Liberalization is recorded only in those cases where the bound rate is below the benchmark rate of protection, otherwise no change is assumed. To provide useful information for modeling and to facilitate further quantitative evaluation of the impact of the UR, the estimated results on individual countries discussed above are aggregated to correspond to the commodity and regional aggregation of the RUNS model developed by the OECD and the World Bank. The regional and commodity definitions follow the current version of the RUNS model described in Goldin, Knudsen, and van der Mensbrugghe (1993) and documented comprehensively in Burniaux and van der Mensbrugghe (1991).

Tables 6a and 6b show the associated price reductions for imports of major commodities in 2002 (estimated as change in the protection rate divided by one plus the initial protection rate) as a result of the changes in protection relative to the baseline levels based on the long-run average and the average in recent years. A zero reduction indicates that the benchmark protection rate is below the bound rate for all components of the aggregate.[5]

The results indicate that regardless of the assumption on the rate of protection without the UR, very little or no liberalization appears to be achieved for most commodities in most countries (Table 6a and 6b). For most industrial countries, the extent of trade liberalization in agriculture as a result of the Round appears to be modest, and the estimated rate of protection in 2002 remains above the benchmark protection rates in most commodities. An important exception is Japan,

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[4] The phase-in period is between 1995 to 2000 for industrial countries and between 1995-2004 for developing countries. For the RUNS model, which require simulations through 2002, the border protection in industrial countries are maintained at their final levels in 2000.

[5] This method do not consider reductions in average protection rates as a result of the introduction of tariff bindings above current applied rates. However, it overestimates the marginal reduction in protection due a binding which reduces protection below the historical average levels (Martin and Francois, 1994). For future work, different benchmarks and alternative approximations of the distribution of future protection given the new tariff bindings based on the methodology developed by Martin and Francois (1994) will be used.

where a significant reduction in protection relative to the baseline levels is estimated in two major imported grains, wheat and coarse grains. Japan established very large reductions, although the final tariff levels remain relatively high. Relative to long-run average, protection in wheat declines from 308 percent to 193 percent, and coarse grains from 336 percent to 180 percent. Most of the OECD countries show very little or no liberalization in highly protected commodities such as sugar and dairy products. In contrast, oilseeds, fruits and vegetables, which had low rates of protection in the pre-UR period showed further reductions as a result of the Round.

In the United States, the tariff equivalent on wheat will decline from 13 percent to 4 percent, on wool from 8 percent to 4 percent, on cotton from 31 percent to 21 percent, and other non-food items from 19 percent to 7 percent. Post-UR protection levels of highly protected sectors such as dairy and sugar remain above the baseline levels. Likewise, virtually no liberalization is recorded in Canada, with sugar, poultry, and dairy sectors remaining highly protected. Australia and New Zealand have the lowest protection levels among the OECD countries. Further reductions were established in the Uruguay Round, with most sectors having protection below 2 percent except dairy at 7 percent, coffee at 6 percent, and non-foods at 23 percent. Sugar in Australia remains protected in 2002 at 20 percent.

Similarly, little or no liberalization is estimated in the European Union and EFTA countries by 2002. In the European Union, the only sector where protection is slightly reduced from baseline levels (based on the long-run average) is beef, with protection declining from 97 percent to 83 percent in 2002. Very slight reductions are estimated in other agricultural commodities. In EFTA, border protection in sugar is estimated to decline from 205 percent to 187 percent and in other foods from 52 percent to 25 percent.

In the case of most least-developed countries, where the tariff ceiling bindings were significantly higher than the historical rate of protection, no liberalization is considered to occur.

This is true in the case of South Asia (Low Income Asia) and Sub-Saharan Africa, where most countries committed only to very high tariff ceiling bindings. Relative to the benchmark levels of protection, no liberalization is estimated to occur in most Low Income Asian countries, including China under the UR. This is because these countries have generally taxed, rather than protected agriculture. Most of these countries established very high tariff ceiling bindings in the Uruguay Round.

Among other developing countries, the largest reduction in border protection relative to the long-run average benchmark levels is estimated in Upper Income Asia. Significant liberalization appears to be achieved in wheat, coarse grains, meats, and other non-food (mainly tobacco and jute). Relative to the long-run average, protection in wheat will decline from 272 percent to 13 percent in 2002, while protection in coarse grains will significantly reduced from 327 percent to 95 percent. This results in significant price reductions for imports of wheat and coarse grains, respectively. Rice in the Republic of Korea and the Philippines is exempted from tariffication under "Special Treatment" provisions. Upper income Asia will maintain protection of 50 percent on its traditional staples. Protection in meats is substantially reduced relative to the long-run average, but there is very little change on dairy, oilseeds, and other foods. In general, the agricultural sector in East Asia remains relatively protected, with tariff equivalents ranging between 40 percent to 100 percent. In India, which has negative protection in most grain production, but provides positive protection in oilseeds (e.g. groundnuts) and tree crops (e.g copra), no liberalization is achieved in most products. In Indonesia, border protection on oilseeds will decline from 77 percent to 27 percent in 2004.

As shown above, most countries in Sub-Saharan Africa generally tax agricultural production in aggregate. Given the maximum ceiling bindings established in the UR, no major changes in policies and trade liberalization are estimated in this region. Nigeria, on the other hand,

provides significant protection in major grains, such as wheat and coarse grains. Border protection in wheat is estimated to decline by 40 percentage points in 2002 (from 190 percent to 150 percent), and coarse grains by more than 300 percentage points (from 452 percent to 150 percent) relative to the long-run average. No liberalization is recorded in the Mediterranean and Gulf countries. In South Africa, tariffs are relatively low, and they have established relatively little change in post-UR protection levels (most reductions in the range of less than 5 percent in absolute terms). The most significant change is in non-food agricultural products from 69 percent to 50 percent in 2002.

Very little change in protection is estimated for the Latin American region. The largest reduction is in cocoa where a 20 percent decline in protection is estimated in 2002 relative to the long-run average. Brazil will reduce border protection slightly in wheat, but otherwise, no liberalization in other commodities is estimated. Similarly, Mexico will only reduce protection in poultry and pork (other meat), but not change protection in the important grain sectors.

Table 6a. ESTIMATES OF AVERAGE IMPORT PRICE REDUCTIONS FROM LONG-RUN AVERAGE, 1982-93, 1/

COUNTRY/REGION	WHEAT	RICE	COARSE GRAINS	SUGAR	MEAT	OILSEEDS	DAIRY
EUROPEAN UNION	0%	0%	0%	0%	-9%	0%	0%
UNITED STATES	-9%	0%	0%	0%	0%	0%	-8%
JAPAN	-47%		-55%	-35%	6%	0%	0%
AUSTRALIA	-1%	-9%	0%	0%	0%	-1%	-16%
CANADA	0%	0%	0%	0%	0%	0%	0%
EFTA	0%	-8%	0%	-11%	0%	0%	0%
UPPER INCOME ASIA	-109%	0%	-78%	-7%	-33%	-3%	0%
INDONESIA	0%	0%	0%	0%	0%	-33%	0%
INDIA	0%	0%	0%	0%	0%	-18%	0%
LOW-INCOME ASIA	0%	0%	0%	0%	0%	0%	0%
BRAZIL	-7%	0%	0%	0%	0%	0%	0%
MEXICO	0%	0%	0%	0%	0%	0%	0%
OTHER LATIN AMERICA	0%	0%	0%	0%	0%	0%	0%
NIGERIA	-15%	0%	-75%	0%	0%	0%	0%
MEDITERRANEAN	0%	0%	0%	0%	0%	0%	0%
OTHER AFRICA	0%	0%	0%	0%	0%	0%	0%
SOUTH AFRICA	0%	0%	0%	0%	0%	0%	0%
MAGHREB	0%	0%	0%	0%	0%	0%	0%

Table 6b. ESTIMATES OF AVERAGE IMPORT PRICE REDUCTIONS FROM RECENT PERIOD AVERAGE, 1989-93 1/

COUNTRY/REGION	WHEAT	RICE	COARSE GRAINS	SUGAR	MEAT	OILSEEDS	DAIRY
EUROPEAN UNION	0%	0%	0%	0%	-12%	0%	0%
UNITED STATES	-15%	0%	0%	0%	0%	0%	0%
JAPAN	-81%		-91%	-47%	-33%	0%	-14%
AUSTRALIA	0%	-4%	0%	0%	0%	-1%	-19%
CANADA	0%	0%	0%	0%	0%	0%	0%
EFTA	0%	0%	-1%	-14%	0%	-18%	0%
UPPER INCOME ASIA	-106%	0%	-76%	-7%	-44%	-5%	0%
INDONESIA	0%	0%	0%	0%	0%	-33%	0%
INDIA	0%	0%	0%	0%	0%	3%	0%
LOW-INCOME ASIA	0%	0%	0%	0%	0%	0%	0%
BRAZIL	-31%	0%	0%	0%	0%	0%	0%
MEXICO	0%	0%	0%	0%	0%	-1%	0%
OTHER LATIN AMERICA	0%	0%	0%	0%	0%	0%	0%
NIGERIA	-12%	0%	-16%	0%	0%	0%	0%
MEDITERRANEAN	0%	0%	0%	0%	0%	0%	0%
OTHER AFRICA	0%	0%	0%	0%	0%	0%	0%
SOUTH AFRICA	0%	0%	0%	0%	0%	0%	0%
MAGHREB	0%	0%	0%	0%	0%	0%	0%

1/ Estimated as (t(f)-t(b))/(1+(0.5*(t(f)+t(b)))

Mediterranean includes Cyprus, Egypt, Israel, Jordan, Lebanon, Libya, Malta, Syria, and Turkey.
Maghreb includes Algeria, Morocco, and Tunisia.
Source: Author's calculations;basic data are from Uruguay Round country schedules.

7. Implications

Given the high level of initial tariffs, the quantitative implications of tariffication on trade flows and prices will not be significant in the next several years. In countries where there were pre-UR price-related border measures such as variable levies and minimum import prices, the UR tariffication process may not have a significant effect since these countries have established tariff bindings which are significantly above the current levels of protection and could apply variable tariffs which have similar distortionary effects.

The intended benefits of tariffication would also be undermined if countries resort to safeguard protection, which according to Finger (1994), has become easier to use as a result of the Round. The estimation of border protection in this paper does not account for the impact of the Special Safeguards (SSP) provisions. Given the trigger levels involved, the SSP could limit the effectiveness of tariffication. In addition, the price trigger conditions under the SSP are related to individual shipments and may introduce certain elements of discrimination. In some cases, countries may not use the maximum level of tariffs specified in their Schedules and could adjust their below-commitment levels of tariffs depending on world market price fluctuations before reaching the limits specified in the Special Safeguard Provisions of Article 5. Also, countries are able to pursue policies which are half-way between tariffs and variable levies under the Special Safeguard provisions.

The results indicate most countries were able to satisfy the guidelines for an unweighted average reduction of tariffs by 36 percent by reducing the highest tariffs the least and lowest tariffs reduced the most or to zero. For instance, sugar has the highest pre-UR protection in the EU (234 percent in 1986-88) and in the United States (131 percent in 1986-88) among the commodities considered. The United States committed to reduce protection in sugar by 15 percent in 2000 from its declared base, while the EU committed less than the

required minimum reduction (6 percent). In contrast, the United States committed a full 36 percent reduction in protection for wheat, rice and poultry -- commodities with relatively small pre-UR protection.

Hence, the approach in achieving the required unweighted average reduction in tariffs allows differential treatment of commodities. It was possible for a country to meet the aggregate reduction of 36 percent by reducing tariffs of important and "sensitive" commodities by the minimum required reduction of 15 percent and reducing or eliminating tariffs of less important commodities. The use of unweighted overall average reductions of tariffs have resulted in continued high protection in some key commodities.

The combination of "dirty" tariffication and the unequal distribution of tariff reductions for many commodities previously protected by NTBs have allowed for continued high protection at the end of the implementation period. The combination also resulted in unequal rates of protection across commodities in certain countries. This is shown in the increased dispersion of protection between the highly protected products and those with already low levels of protection. For example, the results indicate that the bindings for border protection for sugar and dairy products were maintained or even increased in some countries, whereas protection on products such as coffee, cocoa, oilseeds was generally reduced from an already low level. In this case, the approach of tariff reductions employed may lead to even more distortions in agricultural trade in some cases.

According to the Modalities, "current access opportunities.... shall be maintained and increased over the implementation period," and countries were required to specify their current access commitments in their Schedules. In cases where voluntary export restraints existed, the country Schedules appear to include the respective quantities in the current access tables. In effect, VERs were turned into tariff quotas, with quotas allocated to the same exporting countries as

under the former VERs. This implies that there would be no significant economic effects initially since the quantities which can be shipped to the importing country under the former price structures remain limited by a quota, also the exporting country would still obtain the quota rents. In addition, internal prices may change, affecting the amount of rent. However, in contrast to VERs, the importer would not be allowed to reduce the tariff quota, giving suppliers much greater market security.

8. Summary and Conclusions

The effective exemption of agriculture from GATT disciplines has facilitated an agricultural policy in OECD countries characterized by strong protection of domestic producers by means of trade restrictions and direct price support. In contrast, many developing countries have effectively taxed agriculture by means of export taxes and overvalued exchange rates. During the 1980s, while many developing countries came under heavy external pressure to liberalize trade, most industrial countries increased protection in agriculture. When the Uruguay Round began in the mid-1980s, the gap between domestic and world prices of agricultural products in OECD as a whole averaged nearly 80 percent, compared to 41 percent in 1979-81. By 1992, the nominal protection coefficient for OECD agriculture remained at very high levels, estimated at about 74 percent.

The Uruguay Round sought to "halt and reverse agricultural protectionism and remove trade distortions" (1986 Punta del Este declaration). The agreement on agriculture established new international rules and imposed constraints on border protection, export subsidies and domestic support. Participating countries were required to (i) remove and convert all quantitative restrictions into tariffs and reduce border protection (from 1986-88 level) by at least 36 percent over six years and provide minimum access opportunities (at least 3-5 percent

of domestic consumption) in products previously subject to non-tariff barriers; (ii) reduce export subsidies by 36 percent in value and 21 percent in volume; and (iii) reduce trade distorting aggregate domestic subsidies by 20 percent. The obligations were differentiated according to level of development. Developing countries were allowed to offer "ceiling bindings" (i.e., arbitrarily chosen maximum tariff level), and were required to apply lower reduction obligations (two-thirds of the level in industrial countries) to be implemented over a longer transition period (ten years). Subsidies for food security, as well as for investment, input, transport, and marketing were exempt from reductions. In addition, least-developed countries were exempt from reduction commitments.

In this paper, I argue that while significant reforms in the rules were achieved, the extent of liberalization and the degree of reduction in agricultural protection will be significantly less than expected. Based on extensive examination of the country schedules of final commitments and estimates of pre- and post-UR ad-valorem tariff equivalents of border measures, the analysis indicates that the specific and ad-valorem tariffs equivalents which many countries have set in their Schedules are significantly higher than the wedge between actual domestic and world prices in the base period, hence providing higher protection than was prevailing in 1986-88. Thus, the extent of liberalization as a result of the Round was eroded since the post-UR tariff equivalents (*ad-valorem*) in major commodities were set at levels higher than the border protection they replaced. More importantly, the wide occurrence of "dirty" tariffication in the OECD countries resulted in very little or no liberalization in major agricultural commodities. Where tariff reductions would have had the most significant effect on trade, countries opted for minimum reductions. Relative to average protection levels in recent years and the average during the last ten to fifteen years, the post-UR base and final tariff equivalents and bindings are significantly higher in most countries.

The analysis of bindings on tariffied agricultural protection in the industrial countries indicate that the degree of liberalization achieved was modest in most commodities. An exception is Japan, where significant reductions in protection were achieved from very high historical levels. In other OECD countries, the UR results indicate that protection in the EU would increase substantially for a number of commodities if domestic prices are raised by the end of the implementation period to the levels indicated by the EU's ad-valorem tariff equivalents. If the EU applies the maximum specific tariffs in the Schedules, the estimated post-UR ad-valorem tariff equivalents in 1995 indicate significant potential increases in protection in major commodities relative to recent levels and relative to the average protection in 1979-93.

For developing countries, the UR negotiations provided the opportunity to increase their integration into the international trading system. Several developing countries in East and Southeast Asia, Latin America, and Middle East reduced protection in some commodities and chose to lock in previous unilateral reforms. However, most countries in Africa (except South Africa) and South Asia did not use the Round to consolidate domestic efforts at trade reform, with many countries making no substantial liberalization commitments on border protection. In general, the agricultural agreement left many developing country distortions outside of its discipline, such as state-trading monopolies and policies that tax agriculture either explicitly by taxing exports or by maintaining domestic prices below world prices or implicitly by providing higher protection to industry. There is no additional provision to enhance transparency in the behavior of state trading enterprises for either importing or exporting through these agencies. This will likely be an important area of trade distortion for developing countries, not only for present participants but also for those seeking membership to the WTO, particularly China, and the countries of the former Soviet Union where state trading still dominate trade in agriculture. The lack of effective control over the actions of state-trading monopolies or effective discipline on resale prices weakens or eliminates the effects of lower tariffs. In a few cases, bilateral agreements provide bindings on mark-ups on resale prices as in the case of

Japan. However, given the high level of tariff bindings, state trading monopolies will remain largely undisciplined in most countries. In addition, the general exemptions based on balance of payments difficulties remain available for countries to use to maintain trade distortions.

The extent to which developing countries choose to use tariff bindings, and the resulting patterns of liberalization varied considerably by commodity and by country. In general, most developing countries committed a general ceiling binding in less traded or less important commodities subject to unbound duties. For these commodities, developing countries have the flexibility in the future to raise protection, as current applied rates are way below the final ceiling bindings. For economically and politically sensitive products subject to unbound tariffs at the beginning of the Round, most developing countries offered specific ceiling bindings, which also provides potential increased protection in these commodities in the future. The results indicate that tariffication provided countries the opportunity to raise tariffs that were already bound at the beginning of the Round or in the case of the industrial countries, raise bound and/or applied tariffs whether or not they were bound.

The results suggest that tariffication will not likely have a significant effect on trade flows and prices in the next several years. The high levels of tariffied protection in agriculture, combined with exemptions of important domestic support measures, will continue to limit access to major markets. The analysis indicates that much needs to be done in future rounds of multilateral trade negotiations in order to achieve more substantial and real reductions in agricultural protection. Overall, while the Round achieved new transparency in import protection, this came at the expense of significant liberalization in most products. The challenge for the future is to build on the groundwork which has been established to achieve more serious liberalization in world trade.

TABLE 7a. COMPARISON OF PRE- AND POST-UR TARIFF EQUIVALENT

	Pre - UR Tariff Equivalent			Post - UR Tariff Equivalent		
		Average		Base	Final	Final/
	1982-93	1986-88	1989-93	Rate	Rate	Base
				(1)	(2)	[(2)/(1)-1]*100
BRAZIL						
WHEAT	56%	98%	98%	45.00%	45.00%	0.00%
RICE	-30%	-29%	-29%	55.00%	55.00%	0.00%
COARSE GRAINS	-15%	-2%	-2%	37.00%	35.00%	-5.41%
SUGAR	_	_	_	55.00%	35.00%	-36.36%
MEAT	-40%	-52%	-52%	25.00%	25.00%	0.00%
OTHER MEAT	-33%	-42%	-42%	45.00%	35.00%	-22.22%
COFFEE	-10%	-10%	-10%	60.00%	35.00%	-41.67%
COCOA	-17%	-17%	-17%	70.00%	35.00%	-50.00%
TEA	_	_	_	81.25%	35.00%	-56.92%
OILSEEDS	-26%	-23%	-23%	86.10%	35.00%	-59.35%
MILK	-21%	-21%	-21%	53.06%	45.86%	-13.56%
FRUITS & VEGETABLES	_	_	_	50.80%	32.80%	-35.44%
WOOL	_	_	_	20.00%	18.00%	-10.00%
COTTON	-21%	-21%	-21%	55.00%	55.00%	0.00%
OTHER NON FOOD	_	_	_	20.00%	18.00%	-10.00%
MEXICO						
WHEAT	27%	-1%	55%	74.00%	67.00%	-9.46%
RICE	8%	7%	7%	50.00%	45.00%	-10.00%
COARSE GRAINS	68%	73%	69%	174.40%	157.33%	-9.79%
SUGAR	-42%	-58%	-10%	173.00%	156.00%	-9.83%
MEAT	39%	42%	35%	50.00%	45.00%	-10.00%
OTHER MEAT	_	_	_	217.67%	196.00%	-9.95%
COFFEE	_	_	_	65.00%	54.00%	-16.92%
COCOA	_	_	_	50.00%	37.00%	-26.00%
TEA	_	_	_	50.00%	25.00%	-50.00%
OILSEEDS*	34%	-45%	41%	43.95%	39.41%	-10.32%
MILK	-4%	-3%	-6%	66.38%	53.85%	-18.87%
FRUITS & VEGETABLES	7%	3%	13%	50.00%	36.00%	-28.00%
WOOL	na	na	na	30.00%	23.00%	-23.33%
COTTON	17%	25%	2%	50.00%	45.00%	-10.00%
OTHER NON FOOD	_	_	_	50.00%	45.00%	-10.00%
OTHER LATIN AMERICA						
WHEAT	-25%	-17%	-26%	34.25%	34.15%	-0.29%
RICE	_	_	_	161.16%	145.80%	-9.53%
COARSE GRAINS	_	_	_	43.79%	35.41%	-19.15%
SUGAR	35%	41%	23%	84.82%	80.17%	-5.48%
MEAT	_	_	_	51.15%	46.87%	-8.36%
OTHER MEAT	_	_	_	85.09%	78.05%	-8.27%
COFFEE	_	_	_	93.51%	66.36%	-29.03%
COCOA	_	_	_	86.46%	62.80%	-27.36%
TEA	_	_	_	35.00%	35.00%	0.00%
OILSEEDS	-27%	-20%	-29%	46.62%	44.99%	-3.48%
MILK	_	_	_	75.16%	69.31%	-7.78%
FRUITS & VEGETABLES	_	_	_	46.86%	41.66%	-11.09%
WOOL	_	_	_	34.54%	34.23%	-0.88%
COTTON	_	_	_	60.16%	55.93%	-7.02%
OTHER NON FOOD	_	_	_	50.85%	42.83%	-15.77%

_ Not available

Source: Author's calculations; basic data are from Uruguay Round country schedules.

TABLE 7b. COMPARISON OF PRE- AND POST-UR TARIFF EQUIVALENT

	Pre - UR Tariff Equivalent			Post - UR Tariff Equivalent		
	Average			Base	Final	Final/
	1982-92	1986-88	1989-92	(1)	(2)	[(2)/(1)-1]*100
NIGERIA						
WHEAT	190%	249%	182%	..	150.00%	0.00%
RICE	137%	75%	3%	..	150.00%	0.00%
COARSE GRAINS	452%	250%	192%	..	150.00%	0.00%
SUGAR	29%	32%	50%	..	150.00%	0.00%
MEAT	–	–	–	..	150.00%	0.00%
OTHER MEAT	–	–	–	..	150.00%	0.00%
COFFEE	–	–	–	..	150.00%	0.00%
COCOA	-2%	15%	12%	..	150.00%	0.00%
TEA	–	–	–	..	150.00%	0.00%
OILSEEDS*	–	–	–	..	150.00%	0.00%
MILK	–	–	–	..	150.00%	0.00%
FRUITS & VEGETABLES	–	–	–	..	150.00%	0.00%
WOOL	–	–	–	..	150.00%	0.00%
COTTON	12%	19%	-37%	..	150.00%	0.00%
OTHER NON FOOD	na	na	na	..	150.00%	0.00%
MEDITERRANEAN						
WHEAT	12%	25%	31%	168.65%	151.87%	-9.95%
RICE	-43%	-54%	-35%	31.48%	21.85%	-30.59%
COARSE GRAINS	15%	25%	27%	130.34%	117.44%	-9.90%
SUGAR	0%	-13%	11%	106.52%	93.33%	-12.38%
MEAT	–	–	–	165.52%	149.14%	-9.90%
OTHER MEAT	–	–	–	75.52%	61.64%	-18.38%
COFFEE	–	–	–	60.00%	37.50%	-37.50%
COCOA	–	–	–	55.63%	38.23%	-31.28%
TEA	–	–	–	200.00%	180.00%	-10.00%
OILSEEDS	–	–	–	29.15%	25.54%	-12.38%
MILK	–	–	–	166.03%	149.64%	-9.87%
FRUITS & VEGETABLES	–	–	–	39.28%	30.12%	-23.33%
WOOL	–	–	–	19.61%	7.88%	-59.80%
COTTON	-7%	1%	-12%	10.00%	5.65%	-43.51%
OTHER NON FOOD	–	–	–	49.92%	44.92%	-10.02%
OTHER AFRICA						
WHEAT	-1%	10%	-6%	..	132.88%	0.00%
RICE	2%	38%	-1%	..	161.66%	0.00%
COARSE GRAINS	-15%	4%	-15%	..	132.72%	0.00%
SUGAR	16%	44%	-17%	..	100.00%	0.00%
MEAT	–	–	–	..	100.00%	0.00%
OTHER MEAT	–	–	–	..	100.00%	0.00%
COFFEE	-4%	-16%	-2%	..	100.00%	0.00%
COCOA	-24%	-24%	-24%	..	102.03%	0.00%
TEA	3%	5%	-21%	..	100.00%	0.00%
OILSEEDS	-19%	27%	-39%	..	180.00%	0.00%
MILK	–	–	–	..	100.00%	0.00%
FRUITS & VEGETABLES	–	–	–	..	100.00%	0.00%
WOOL	–	–	–	..	100.00%	0.00%
COTTON	-2%	-19%	-26%	..	161.00%	0.00%
OTHER NON FOOD	–	–	–	..	100.00%	0.00%

_Not available;..no tariff bindings for the period in question.

Mediterranean includes Cyprus, Egypt, Israel, Jordan, Lebanon, Libya, Malta, Syria, and Turkey.

Source: Author's calculations; basic data are from Uruguay Round country schedules.

TABLE 7c. COMPARISON OF PRE- AND POST-UR TARIFF EQUIVALENT

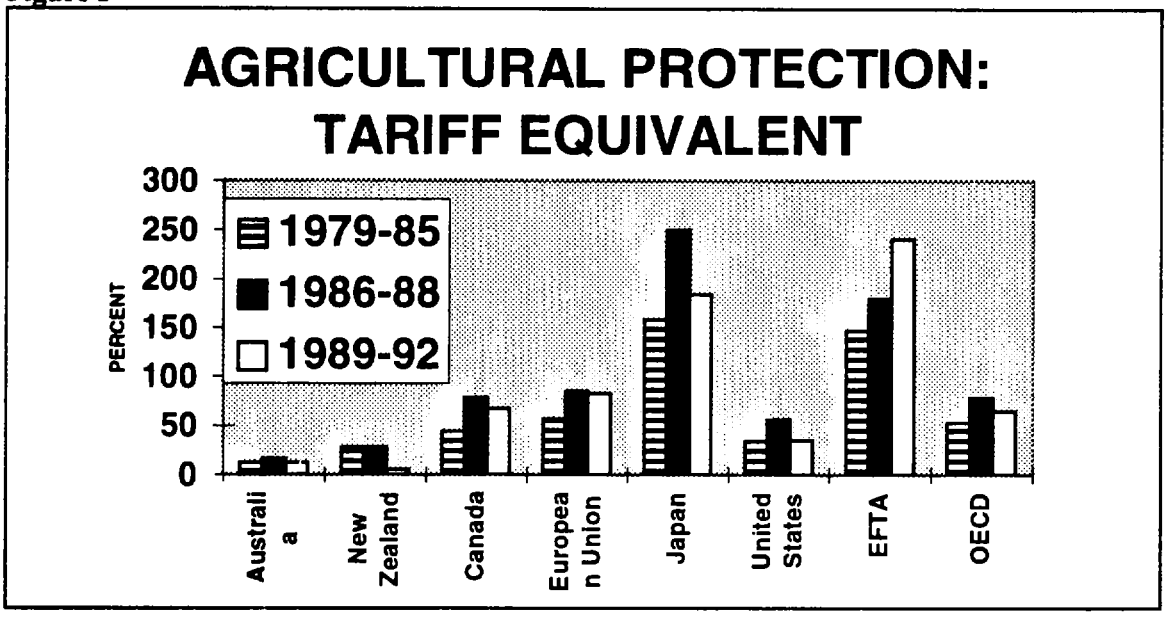
	Pre - UR Tariff Equivalent			Post - UR Tariff Equivalent		
	Average			Base	Final	Final/
	1982-92	1986-88	1989-92	(1)	(2)	[(2)/(1)-1]*100
SOUTH AFRICA						
WHEAT	7%	10%	-21%	74.50%	47.00%	-36.91%
RICE	_	_	_	5.00%	0.00%	-100.00%
COARSE GRAINS	24%	48%	1%	68.00%	50.00%	-26.47%
SUGAR	50%	98%	-31%	124.00%	105.00%	-15.32%
MEAT	40%	40%	40%	150.00%	80.50%	-46.33%
OTHER MEAT	20%	20%	20%	93.32%	57.49%	-38.39%
COFFEE	_	_	_	140.00%	119.00%	-15.00%
COCOA	_	_	_	2.50%	0.00%	-100.00%
TEA	30%	30%	30%	200.00%	170.00%	-15.00%
OILSEEDS	20%	20%	20%	116.59%	66.43%	-43.02%
MILK	30%	30%	30%	189.46%	88.94%	-53.06%
FRUITS & VEGETABLES	_	_	_	7.40%	5.81%	-21.46%
WOOL	30%	30%	30%	0.00%	0.00%	0.00%
COTTON	30%	30%	30%	100.00%	60.00%	-40.00%
OTHER NON FOOD	_	_	_	69.00%	44.00%	-36.23%
MAGHREB						
WHEAT	32%	36%	34%	195.85%	150.75%	-23.03%
RICE	_	_	_	233.50%	177.00%	-24.20%
COARSE GRAINS	17%	19%	13%	141.93%	108.79%	-23.35%
SUGAR	41%	64%	79%	219.54%	164.80%	-24.93%
MEAT	_	_	_	302.77%	212.86%	-29.70%
OTHER MEAT	_	_	_	124.40%	94.52%	-24.02%
COFFEE	_	_	_	72.50%	54.50%	-24.83%
COCOA	_	_	_	103.81%	69.72%	-32.84%
TEA	_	_	_	72.50%	54.50%	-24.83%
OILSEEDS	45%	45%	45%	129.21%	97.54%	-24.51%
MILK	50%	50%	50%	112.85%	87.10%	-22.82%
FRUITS & VEGETABLES	_	_	_	91.42%	69.01%	-24.51%
WOOL	_	_	_	45.75%	33.00%	-27.88%
COTTON	102%	166%	104%	27.22%	20.47%	-24.80%
OTHER NON FOOD	_	_	_	70.69%	53.15%	-24.81%

_Not available

Maghreb includes Algeria, Morocco, and Tunisia.

Source: Author's calculations; basic data are from Uruguay Round country schedules.

Figure 1


AGRICULTURAL PROTECTION:
TARIFF EQUIVALENT
PERCENT
300
250
200
150
100
50
0
1979-85
1986-88
1989-92
Australia
New Zealand
Canada
European Union
Japan
United States
EFTA
OECD

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